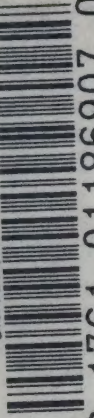


BRITISH TREES AND WILD FLOWERS

UNIVERSITY OF TORONTO



3 1761 01186907 0



NELSON

IRVING H. CAMERON
307 SHERBORNE ST.
TORONTO

IRVING H. CAMERON
307 SHERBORNE ST.
TORONTO



Apple.

BRITISH TREES AND WILD FLOWERS

BY
ARTHUR O. COOKE

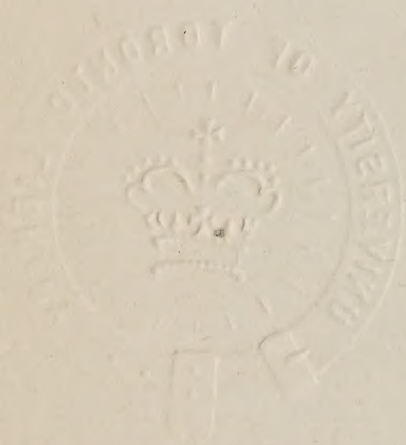


THOMAS NELSON AND SONS, LTD.
LONDON, EDINBURGH, AND NEW YORK

BoF
C

609554

31. 5. 55



PREFACE.

WE all of us appreciate the beauty which trees give to a landscape, but we do not all pay great attention to the growth and habits of an individual tree. We know, perhaps, that the leaf of the horse-chestnut is large, while those of the oak and the elm are small. Even in winter, when there are no leaves on the trees to guide us, most of us know the difference between a walnut and a silver birch.

This book is meant to lead its reader just a little further still—to enable him not only to identify a tree by an examination of its leaves, but also by its shape, by the way in which the branches grow, by the roughness or the smoothness of its bark, and so on.

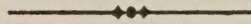
When once we interest ourselves in studying trees our love for them will quickly grow. We

shall want to know more and more about them : how, for example, the unopened leaves are sheltered in the bud ; and what is the nature of the flowers, which, in large trees, are often small and easily passed by.

Trees are, to many of us, fully as interesting as animals, and the study of them is less difficult. We catch a glimpse of some wild creature for a moment, and would like to note its shape and colour and observe its habits ; but it has seen us and has fled. Even wild flowers have this disadvantage, that they often die entirely away in winter and are seen no more till spring. But trees await us in their place at every season of the year. In summer their full foliage is displayed ; in autumn we can note the rich tints of their fading leaves. And even in winter and in the chilliest days of early spring the buds are there, and we can study their slow progress day by day. Trunk, branches, and bark are always to be seen. A tree may be to us the most faithful and interesting friend in all nature.

IRVING H. CAMERON
307 SHERBORNE ST.
TORONTO

CONTENTS.



1. THE ALDER	7
2. THE MOUNTAIN ASH	10
3. THE APPLE	13
4. THE ASH	17
5. THE ASPEN	21
6. THE BEECH	24
7. THE SILVER BIRCH	28
8. THE CEDAR OF LEBANON	31
9. THE CHERRY	34
10. THE HORSE-CHESTNUT	37
11. THE COMMON ELM	41
12. THE HAWTHORN	45

13.	THE HAZEL	49
14.	THE LABURNUM	53
15.	THE LARCH	57
16.	THE LIME	61
17.	THE OAK	65
18.	THE PEAR	70
19.	THE SCOTS PINE	74
20.	THE WILD PLUM	78
21.	THE LOMBARDY POPLAR ,	81
22.	THE SPRUCE	85
23.	THE SYCAMORE	89
24.	THE WALNUT	93



Alder

OUR BRITISH TREES.

I. THE ALDER.

THE alder may attain a height of seventy or eighty feet, but is more often a small tree from twenty to forty feet high, or even a mere bush. Its bark grows rough with age, and becomes nearly black. The trunk is seldom very thick, and as large healthy shoots very often grow out from the base, the tree may show several stems of almost equal size and importance.

The leaves, from two to four inches in length, are egg-shaped, and the botanical term for many egg-shaped leaves is *ovate*. But the leaf of the alder is termed *obovate*, because, while an *ovate* leaf is one which is broader at the base than at the tip, the reverse is the case with the leaf of the alder, which is broadest at its tip.

Occasionally alder leaves end in a point, but

more often the broad tip has a distinct dent or notch in it. Like the leaves of the mountain ash, the leaves of the alder are serrated, or saw-like, except near the base, where they are smooth. They are alternate on the twig, and are spirally arranged on its four sides. They are dark green, turning to brown or even black when dying. They are smooth, except for little tufts of hair upon the under side; and are, moreover, sticky when young and first opened, thus earning for the tree its descriptive Latin name—*glutinosa*. The young twigs are also sticky.

The alder suffers greatly from any want of moisture. It therefore grows best in damp places such as banks of ponds or streams, and can only endure the comparative absence of water from the soil if the surrounding atmosphere is moist.

The young shoots of trees possess *active* buds which produce leaves during a shoot's first year of life; and also *resting-buds* which, usually not until the following year, will produce other shoots. The large red-brown *resting-bud* of the alder is, unlike those of nearly all other trees, distinctly stalked. Most resting-buds are *sessile*—that is, seated—on the twig.

The leaves appear on the alder late in spring,

and remain green far into the autumn ; while the flowers open early—February or the first days of March. The male catkins are drooping, and of a dull brown colour ; they may be found, small but still visible, upon the tree during the preceding autumn.

The female blossom is cone-shaped, and is raised upon a stalk ; when fully grown the cone is the size of a nut. The scales of this little cone do not open and shed their enclosed brown *fruits* until the following spring, and sometimes the empty cones still hang upon the tree for months.

The wood of alders is quite white when first cut from the tree, but with exposure to the air it turns to a reddish-pink colour. It is used to some extent by turners and wood-carvers, and is in demand by charcoal-burners, the charcoal of alder wood being of excellent quality. Moreover, being very enduring when placed in water, it is much used for piles and other submerged wood-work in connection with dock-building. For other purposes it is not greatly valued as timber.

2. THE MOUNTAIN ASH.

THAT is the name by which this beautiful little tree is perhaps best known in England, but in Scotland it is more often called the rowan. That indeed is a better name for it, for mountain ash is apt to be misleading. Its leaves are in some ways like those of the ash, but there is no other resemblance or any relationship between the trees. And, though the mountain ash is a native of the hills, it will grow almost everywhere, in any soil. It is a favourite ornament of suburban gardens, and at a certain small railway station in the flat country of the English Midlands, the platforms are shaded by long rows of these delightful trees.

The name rowan is derived from Norse and Sanskrit words which mean "a charm," for in old times the tree was credited with magic powers.

In one respect the mountain ash differs from many trees of which we shall speak. Many we shall describe have *simple* leaves; those of the mountain ash are *compound*, being composed of



Mountain Ash.



several narrow leaflets. These leaflets are arranged in pairs upon the leaf-stalk, there being usually from five to eight, or even nine, pairs, each leaflet of a pair being exactly opposite its fellow. They have no stalk, but are *sessile* on the main leaf-stalk. At the end of the leaf-stalk, however, is a single leaflet which *is* stalked.

The greater part of each leaflet is *serrate*, or even *bi-serrate*, but near the base the margins are smooth. The upper surface of a leaflet is dark green, the lower side being rather paler in its shade.

The tree has a conspicuous flower, which appears in May or June. It is creamy-white in colour, and has a pleasant fragrance not unlike that of hawthorn. The blossoms are arranged in large clusters which are noticeably flat-topped, all the flowers of a cluster growing to the same level.

We must remember that trees and other plants have *male* and *female* flowers. It is the female flower that produces seed, but it can only do so when it has been fertilized by pollen from the male. Some flowers, however, are a combination of male and female.

The flowers of the mountain ash are *bi-sexual*, male and female blossoms not being distinct. Attracted by the large conspicuous flower clusters,

by their fragrance and the nectar they contain, bees, beetles, and flies crowd to the tree, and fertilization is effected by their aid: they transfer the pollen from flower to flower.

After the flowers come the clusters of scarlet fruit which make so cheerful a sight in early autumn, till the thrush and other birds have stripped the tree. The so-called "berry" is a true *fruit*, containing two, three, or four small stones. Under the bright scarlet skin or *epicarp* the flesh within is yellow.

This hardy and accommodating little tree grows well even in moderate shade. Wherever the seed is dropped and finds a few chance grains of soil—in chinks of rocks or even in some fork or crevice of a larger tree—it will take root and live, throwing out thin roots which suck up food and moisture from the crannies into which they penetrate.

The average height is from twenty to thirty feet, though larger specimens are known; in the far North it dwindles to the size of a mere bush. The bark is smooth, becoming rough with age, and often showing horizontal scars, as if scored with a knife. The wood is close-grained and tough, and is used for tools and other purposes where no great size is needed.

3. THE APPLE.

LIKE a fellow member of the same family, the plum, the wild apple of this country is divided into more than one species or sub-species. There are the crab and the common apple, but it is of the first-named we shall chiefly speak.

The wild apple has ventured farther north than has its relative, the pear, for it grows uncultivated in Scotland as far as the river Clyde. Usually the tree can be distinguished from the pear at any season of the year by shape alone. Seldom more than twenty or twenty-five feet high, and often a mere bush, the apple is wide-spreading, with crooked and horizontal, or even drooping, boughs.

The trunk is very rugged and rough-barked, and is often much distorted and straggling in its growth. It is this straggling, wide-spreading, and picturesque growth of the tree, whether wild or cultivated, that makes the older apple-orchards of Herefordshire and Devon the delightful scenes they

are. But the up-to-date fruit-grower prunes his trees to a more rigid form, while the ancient, gnarled, and often lichen-covered patriarchs fall before the axe and saw.

The leaves, which are arranged spirally upon the twigs, vary a good deal in shape ; they may be oval, or at times almost round. They are serrate, and end in a sharp tip ; are glossy, shining, and dark green on their upper surfaces, but paler and somewhat downy below. The leaf-stalk is much shorter than that of the pear, being only about half the length of the mid-rib of the leaf.

The faintly fragrant, five-petalled blossoms are usually pink and white in colour ; but pure white blossoms may be sometimes found upon the apple, in the same way that the pear occasionally shows touches of pink. The flowers, which open in May, are bi-sexual, as are those of the plum and pear. Fertilization is effected by the help of insects attracted to the blossoms by their scent and showy petals. It is probable that not only do bees and other insects visit the tree by day, but also some night-moths, for the scent of the flowers is usually stronger at dusk.

The fruit of the crab hangs downwards on

the tree, is sometimes red, but more commonly yellow, and is too sour to be eaten in its natural state; but the pulp, when boiled with an ample allowance of sugar, makes a good preserve. Pigs eat the raw fruit greedily, and doubtless their ancestors whom Gurth and other swineherds led into the British forests many centuries ago, often found crabs a pleasant change from acorns and beech-mast.

The wood, hard and finely-grained, is used for walking-sticks and other small articles.

The common apple has stouter twigs, leaf-stalks, and flower-stalks than the crab, and as a consequence the fruit is often held upright. The lower surface of the leaf is softly hairy; both flowers and fruit are larger, and the latter is comparatively sweet.

It is a popular belief that mistletoe is often found growing on the oak; the fact is that it is very rarely to be seen on that tree. But it is very common on the apple, and also on the poplar.

It is quite possible to see a thrush engaged in planting mistletoe upon an apple or some other tree. The bird flies to a bunch of mistletoe on which are berries, and there makes a feast. When

he has finished, some of the sticky contents of the berries lingers on his bill. Wishing to rid himself of this, he wipes his beak upon the branch of a tree ; a seed clings to the sticky mucilage, and is thus firmly planted on the bough. The mistletoe is a parasite, drawing the necessary nourishment for its existence from the tree on which it grows.



Ash.

4. THE ASH.

WE have known a walnut-tree mistaken for an ash in winter ; but even in that bare season, when the leaves and fruit are absent, there are differences which should prevent any such error. The bark of the ash, smooth when young, is more finely and delicately furrowed in maturity. The boughs are less twisted in shape than those of the walnut, and have a decided outward and downward sweep at their ends. Lastly, an examination of the stout blunt-ended twigs, which curve upwards in a marked manner, should remove all doubt. On these the leaf-buds will be found opposite each other, in pairs, while walnut-buds are alternate. Ash-buds are a deep velvet black in early spring.

The ash, too, is a more graceful, somewhat less sturdy and less spreading tree. Its foliage is comparatively thin, throwing no dense shade. Though the tree may reach a height of one hundred feet, its trunk is always comparatively slender.

The stoutness of the twigs is needed by the

size of the leaves which they have to support. These are *compound*, being composed of from seven to thirteen leaflets, which are arranged in pairs, with a terminal one at the end. Like the leaflets of the horse-chestnut, those at the base are the smallest. The main leaf-stalk is grooved or channelled on its upper side, but somewhat semi-circular below.

The leaflets are *sessile*, *serrate*, long and narrow, and are pointed at the end. A deep rich green in colour through the summer, they turn brown or yellow in the autumn days—that is, if they hang upon the tree long enough to do so. But it often happens that a single sharp early frost will bring them, while yet green, in a shower to the ground, leaving the tree quite bare.

Yet the leaves open late, sometimes before and sometimes after those of the oak. From this variation country people profess to foretell the weather of the coming summer, as in the following doggerel :

If the oak is out before the ash,
It'll be splash, splash, splash ;
If the ash is out before the oak,
It'll be choke, choke, choke—

the “choke” alluding to the dust expected to

prevail. But a similar rhyme gives a forecast directly contrary to this :

If the ash is out before the oak,
There'll be a soak.
If the oak is out before the ash,
There'll be but a dash.

The small blossoms appear in clusters, earlier in the spring than do the leaves. They are interesting, being male, female, and bi-sexual, any or all of which may grow on a single tree. Still more curiously, blossoms of a tree may be male one year and female in the following season.

The winged *samaras* hang far into the summer in green clusters on the tree, and are often called "keys." Each seed is contained singly in a long narrow pod or sheath which serves as a wing, and which has a peculiar twist in shape to assist its flight through the air. It may be as much as eighteen months before a seed of ash germinates.

Although the foliage is not dense like that of beech, the ash does harm to crops beneath its boughs, the drip from its leaves destroying them. At least that is what country people will tell you ; but many such beliefs are now dying out, and it

is very doubtful if any tree is in itself harmful to what grows beneath : it is the shade which does harm. However, though the roots of the ash descend deeply, they are also wide-spreading, and exhaust the soil for many yards around the tree. The tough elastic wood is valuable for many purposes.



Aspen.

5. THE ASPEN.

THE aspen is a variety of poplar, and poplars and willows belong to the same "natural order" of trees. But there is usually little difficulty in distinguishing a poplar from a willow. Most willows have very narrow leaves, and their catkins—the flowers—stand upright upon the twigs. Poplars usually have broad leaves, and bear catkins which hang down. The sallow, however, often has a broad leaf, while the willow-leaved poplar has a narrow one.

It may be a little more difficult to distinguish between an aspen, of which the Latin name is *Populus tremula* (trembling poplar), and an abele or white poplar; but a well-grown abele may attain a height of one hundred feet, while the aspen rarely grows so high. The edges of the aspen leaf are notched with teeth, the points of which turn in. The *petioles*, or leaf-stalks, of the aspen are peculiarly long.

It is from these long leaf-stalks that the tree

has gained its Latin name. All poplar leaves tremble more than those of other trees, but leaves of aspens tremble most of all.

The cause of the trembling motion of poplar leaves is the peculiar shape of the leaf-stalks. Those of many trees are flattened from above ; their sides only present a narrow surface to the wind. The leaf-stalks of poplars are flattened from the sides, and the broad flattened sides catch every passing breath of air and tremble on their twigs.

Both poplars and willows thrive best near water, or at least in damp situations. Willows indeed can hardly live on a dry soil ; but the aspen will contrive to do so, and the reason is interesting.

All trees have *stomata*, or tiny mouths, upon their leaves, through which they give off, or *transpire*, water in the form of vapour ; by the *stomata* trees also breathe. The aspen transpires very freely under ordinary circumstances ; but if it finds itself in a dry soil, it is thought by some to have a special power of closing its stomata, and can thus retain sufficient water for its needs.

The aspen is a quick grower, but a short-lived tree ; often it will begin to die at the comparatively early age of sixty years. In a young tree the bark is smooth, thin, gray ; in older trees it thickens, and is often deeply grooved. Its roots do not go deep into the ground.

Both male and female flowers are hanging catkins, which appear some time before the leaves. The male and female catkins always grow on separate trees.

Almost immediately the seeds are scattered they begin to *germinate* or sprout, and in a few days they have lost this power. This is the case with many trees of which the seed is ripened in the spring. Seeds ripened in the autumn, such as acorns and beech-mast, retain their power of germination for a longer time.

Aspens, like other poplars, make comparatively poor soft wood. But it is light, and therefore useful for boxes which need no great strength. Nor does it splinter easily when pierced by nails. It is largely used also for the making of matches.

6. THE BEECH.

THE stately beech was perhaps more highly valued in past years than now. Before coal was discovered wood was the only fuel, and no wood gives more heat when burnt than that of beech.

Among the earlier domesticated animals of England was the pig. Pigs could not eat potatoes in those days, for there were none; nor meal, for the small quantity of corn then grown was used for human food. The pigs kept by the early Britons fattened in the forests upon acorns and beech-mast.

Beech is of little service to the timber-merchant, but is useful for the manufacture of light chairs. Thousands of these are yearly made in Buckinghamshire, where the beech flourishes upon the hills. *Sabots*—French wooden shoes—are also made from beech.

But a person to whom the beech is of great value is the forester. He sows its mast, or



Beech.

plants young trees, among his half-grown oaks ; and he does this for more than one reason.

Beech leaves are very rich in matters useful to the soil. When they decay they form rich *humus*, or leaf-mould, which benefits the oaks with which they grow.

The beech, too, is a tree which bears shade well ; it is content for the surrounding oaks to tower up above it towards the light. Meanwhile the thick beech foliage shades the soil, preventing it from getting parched and dry. Moreover, few small plants will grow beneath the beech ; its dense shade soon destroys the grass and weeds which, if allowed to flourish, would impoverish the soil.

So, though its timber is not greatly valued, the beech is still a useful tree ; and it is one of the most beautiful we have.

No other tree has such a fine smooth bark of silvery gray ; no stem so much resembles a stone pillar as the trunk of some great beech. Often the "root-arms" stretch for some feet up the tree, giving the appearance of a fluted column to the lower portion of the trunk.

The smooth gray bark is thin. If a beech

has for years been thickly shaded, and, by the cutting down of neighbouring trees, is suddenly exposed to brilliant light, the bark is often "sun-scorched," burnt and marked with large discoloured spots.

The leaf-buds are long, brown, and shining, and produce small shining leaves, dark green in shade. These do not grow in pairs, as we shall see they do upon the sycamore; they grow alternately, first one on one side of the twig, and then another on the other side. Each leaf has a small fringe of hairs when young, and the upper part of its blade is toothed. The foliage is very thick; no tree gives such a dense unbroken shadow as the beech.

The little male and female blossoms grow on the same tree; the female blossoms upright, while the males hang down. It is, of course, the female flowers that produce the prickly cases which contain the brown three-cornered "mast." Seed does not ripen till a beech is forty, fifty, even perhaps eighty, years of age. Good crops of mast are borne not oftener than every five or seven years.

Though the beech often throws out horizontal

branches, yet more usually the boughs point upwards at an angle from the stem. Sometimes the trunk extends unbroken almost to the summit of the tree ; sometimes it divides early, forming two or three great stems. The roots are spreading, often showing themselves above-ground at some little distance from the tree.

The handsome copper beech, with its bronze-coloured leaves, is a favourite ornament of parks and gardens. We like to see its striking dusky foliage here and there amid the varied shades of green of other trees. But it can never hope to rival in our hearts the common beech, so stately towering and densely foliated, the true woodland sister of the sturdy oak.

7. THE SILVER BIRCH.

SURELY of all our English trees none is more graceful than the lovely silver birch. The slender stem with its smooth bark of silvery white, the upward-pointing boughs with drooping ends, the trembling leaves and feathery twigs, have earned for it the fitting title of the lady of the woods.

And happily this lovely tree will grow on almost any soil ; it is at home alike on the bare mountain side or in the marshy ground beside a stream. There are one or two other varieties of the tree, but the silver birch is the most beautiful of all.

In the preceding chapter we have spoken of the beech, and we noticed particularly two facts in connection with that tree : it grows well in shade, being what foresters call a good "shade-bearer" ; and its thick foliage casts a dense shadow. In both of these respects the silver birch is a great contrast to the beech ; it cannot grow in shade,



Silver Birch.

but must have light. If other trees grow round it, the birch shoots up quickly, till it overtops them and is free. And, too, it casts a very thin light shade.

If we examine the drooping twigs of a silver birch some day in summer when the leaves are on the tree, we shall find out one reason for this. The leaves are somewhat heart-shaped, tapering to a point, and they are *bi-serrate*—the edges of the leaf are toothed, as in a saw, and between each large tooth-point and the next one is a smaller point. Most often birch leaves grow alternately upon the twig; first one on one side, and the next on the side opposite.

Most of the leaves upon the drooping twigs hang down; their surface is not horizontal to the ground, but perpendicular, and thus the light strikes through between them to the earth. That is a reason why a birch-tree gives but a thin shade. We do not, on some broiling summer's day when we are hot and tired, seek the shadow of a silver birch; an oak or lime or sycamore will give us cooler shelter, better still a beech.

The silver-white bark of the tree is thin and soft; a mark is easily made on it with the finger-

nail. Yet in the dark a silver birch may be sometimes mistaken for some rough-barked tree ; for, as it grows towards middle age, the bark at the trunk's base becomes hard, rough, and furrowed. This rough bark may extend four, six, or even ten feet up the tree.

The thin white bark curls off in bands or circles round the trunk, showing a darker shade beneath, and giving a mottled, variegated appearance to the stem.

The flowers are catkins, and both male and female catkins grow on the same tree. Both open with the leaves in April, but at the end of the preceding summer the male catkins are already formed and may be seen. They grow on the twigs' ends, in groups of two or three ; when open they hang down. The small, green, female catkins are not seen till spring.

The roots of silver birches are comparatively small ; it is no heavy massive tree of which they have to bear the weight. The height is rarely more than forty, or perhaps fifty, feet, and the trunk is often less than a foot in diameter. The tree grows quickly, but is not long-lived, usually dying before it is a hundred years of age.



Cedar of Lebanon.

8. THE CEDAR OF LEBANON.

THIS most beautiful and stately tree is a great contrast to that which we have noticed in the previous chapter. The birch is tall and slender, while the cedar is sturdy and spreading. The branches of the cedar of Lebanon are very large ; and many of them, after leaving the main stem in an upward direction, soon spread out horizontally.

There are two other varieties of cedar frequently seen in England. One is the deodar, a common tree on the hills of India ; the ends of its branches are usually drooping. The Atlantic cedar, on the contrary, has branches which point upwards at an angle from the trunk.

Not one of the three is a native of England. The Atlantic, or Atlas cedar, comes from the Atlas Mountains of North Africa, the deodar from India, and the cedar of Lebanon from Asia Minor.

The horizontal spreading of the cedar of Lebanon's branches gives to the tree a very

majestic and at the same time a rather unusual appearance. Its dense mass of dark green foliage is spread out in several distinct layers or terraces, almost like the different stories of some great greenhouse. This resemblance is added to by the fact that the tree rarely tapers to a point; the upper branches often form a broad flat *crown*. The cedar of Lebanon grows to a height of fifty, seventy, or eighty feet, and is believed to live sometimes two thousand years.

The foliage is of needles, and is evergreen; needles remain for three or four years on the tree, becoming brown when dying. Some of them grow in tufts, the needles of one tuft all springing from a common base. When the tuft falls it leaves a small rough knob upon the twig.

These tufts of needles grow upon *dwarf-shoots*, while other rather longer needles will be found growing singly upon longer shoots. The *stomata* are upon the under surface of a spruce needle.

The yellow flowers open in the autumn, and both male and female blossoms grow on the same tree.

The cedar is a conifer, with cones which stand upright upon the twigs. They are not usually

quite so long as those of the spruce, which we shall notice presently, but are thicker; a well-grown cone may be five inches long by perhaps three inches thick. About the cedar's cones there is an interesting point for us to note.

They, like those of the spruce, contain the seed, which is protected by the scales. But the scales of cedar cones do not open as do those of spruce; the scales fall off and the seeds fall at the same time. Then there is left upon the twig an upright, rough, and naked stem—all that remains of the once plump and shapely cone. The seed, some half-inch long, is winged.

There is much resin in the cedar, and this gives its ruddy handsome wood a pleasing scent. The wood of English-grown cedars of Lebanon is of little value, being soft and liable to warp and shrink. That grown abroad is of a finer quality, and has been found in good condition after having been two thousand years in use.

9. THE CHERRY.

OF the three species of cherry growing wild in this country, the gean is much the largest tree, and the one most commonly found ; it is therefore that which we shall chiefly notice here. The other two are the dwarf or sour cherry, and the bird cherry. The cherry has, however, been cultivated in England for nearly two thousand years.

The gean is said to attain at times a height of seventy feet ; but such a size is very unusual, the tree being commonly from thirty to forty feet high. The bark on the old trees is rough and furrowed, the boughs point upwards in a noticeable manner, and the twigs are erect.

The leaves, when in the bud, are folded with their two halves face to face. They are spirally arranged upon the twigs, and hang upon long stalks ; of a brown shade when first opened, they become dark green ; are narrow at the base, but slightly broader towards the pointed tip. They



Cherry.

are distinctly serrate or bi-serrate ; the autumn tints vary from orange and pink to a deep crimson.

The buds on the twigs vary in shape. Some, those which are long and pointed, develop into shoots bearing leaves. Others, short, round, and blunt, produce the groups of snowy blossoms.

The flowers, which are bi-sexual, appear with the leaves, growing in clusters of from two to six. Fertilization is effected by the visits of various insects.

Compared with the fruit of another native cherry, that of the gean is comparatively sweet and edible ; it may vary in colour from red to black. There is no *bloom* on the skin or *epicarp* of the cherry, and the stone within the flesh is smooth ; not absolutely smooth, however, for it is broken by two furrows and a single sharp angle.

High in the branches of a cherry there is sometimes seen a bushy mass which at first sight may be taken for a large and very ill-made nest. It is no nest, however, but a "witch's broom," formed by the matting together of a large number of the twigs.

This curious nest-like structure is caused by a

fungus, the threads of which penetrate the twigs and injure them. The shoots thus attacked soon cease to flower or to grow in length ; instead of doing so they throw out short shoots in all directions, soon forming a dense tangled mass conspicuous in the tree.

The close-grained wood of the cherry takes a good polish and is used for furniture, and also for musical instruments. Its deep red colour almost enables it to pass for mahogany.

The dwarf or sour cherry, also a fairly common wild tree, never attains the height of the gean, and is often little more than a shrub. The fruit, as may be gathered from the name, is sour. The boughs are spreading, and may often droop ; but the leaves, which appear later than the blossoms, are much less drooping than those of the gean.

The bird cherry, a tree from ten to twenty feet high, bears a small and bitter fruit, the stone of which has a wrinkled surface. Its leaves are not folded in the bud as are those of the gean, but are *convolute* ; each half of the leaf is rolled backwards towards the mid-rib, with the upper face inside.



Horse-Chestnut.

10. THE HORSE-CHESTNUT.

FEW of the trees of which we have so far spoken possess conspicuous flowers, except the mountain ash. Those of the lime, soon to be spoken of, are large and fragrant, but they are drooping, green, and so are half concealed among the leaves. But the horse-chestnut has a large, erect, and very noticeable *inflorescence*—more so than that of any other of our forest trees.

The blossom is a very handsome snowy spike, spotted when young with yellow, which turns red. Standing erect above the bright green leaves, it adds a crowning glory to this stately, spreading, dome-shaped tree, and makes it one of the most beautiful we have.

The tree is a delightful one to study at all seasons of the year. Let us look at the base of one from fifty to seventy feet in height. The bark, smooth when young, has become perpendicularly furrowed, and the furrows often have a twist, as though the tree had been seized from above by

some strong giant hand, and twisted slightly round upon its roots. The upward-shooting branches soon curve over downwards, but their stout blunt-ended twigs point upwards, and the broad buds are erect.

In spring these buds are of a rich red brown in colour, and are protected by a coating of shining resin. Little by little they unfold, and there emerge the great broad leaves, *compound* like those of the small mountain ash, but very different both in size and shape. A horse-chestnut leaf may be as much as eighteen inches broad.

Five or seven is the number of the leaflets usually borne by a leaf. They are in pairs, excepting the terminal one, which is always the largest, while those nearest the base form the smallest pair. The leaflets are somewhat pear-shaped, narrow at the base and broadening to the tip, yet ending in a sharply drawn-out *acuminate* point. They are also bi-serrate. The whole leaf is called *palmate*, from its resemblance to an open hand, and also *digitate*, from the Latin word *digitus*, a finger.

In autumn the leaflets often fall separately, becoming detached from the *rachis*, as the main

leaf-stalk of a compound leaf is called. Their autumn tints are red and yellow.

When the young leaves first open from the leaf-bud they are quite erect. Soon they droop over, but at last become quite horizontal, spreading out their upper surface to the light. Usually those upon the under sides of boughs have larger surfaces than those above, and thus they get an equal share of sun.

Some of the lovely blossoms are male, others bi-sexual. Fertilization is effected by the humble-bees which visit the flowers for the nectar they contain. The pollen of male blossoms is not yellow, as in many trees, but brick-red.

We may perhaps feel inclined to call the smooth brown chestnuts, so well known, the "fruit"; but they are not—they are the *seed*. The fruit is the green, leathery, prickly-coated case in which they are contained. In the edible or Spanish chestnut, on the other hand, the chestnuts are the *fruit*.

The horse-chestnut is grown chiefly for ornament, its timber being soft and of little value. It serves only for the making of water-pipes, for turners' work, and as a source of charcoal

for gunpowder. An oil has been extracted from the nuts, which are largely consumed by grazing stock in parts of Switzerland. The tree is a quick grower. A very ornamental tree is the crimson-flowered variety.



Common Elm.

II. THE COMMON ELM.

ALTHOUGH it is the common or small-leaved elm which is to be described in this chapter, yet it is necessary to mention also the wych or Scots elm, if only to point out certain differences between the two. Some of these differences are easily seen on comparing the trees, but there is another—the wych elm is a native British tree, while the common elm was introduced to this country by the Romans.

As its alternative name suggests, the leaves of the common elm are smaller than those of its native relative; so too are its flowers and fruit. Both trees have thick rough bark, that of the common elm being the more deeply furrowed.

But the most striking difference is usually in form. The wych elm, though often tall, is spreading, with low-growing and somewhat drooping branches. The common elm, on the contrary, is a tall and often noticeably narrow tree, having few important boughs below those which, grouped

in a dense cluster, form the head or *crown*. Yet the entire trunk is often green in summer-time with a growth of smaller branches and young shoots. The tree too gives off suckers freely from the base and roots, and it is from such suckers that young trees are grown, for seed of the common elm rarely ripens in England.

About one hundred and twenty feet is generally considered as the outside limit of its height; but there is a specimen well known to the writer which, ten years ago, measured one hundred and thirty-two feet, while the girth of the trunk was twelve feet. This magnificent tree, one of a group of several of its kind hardly less fine, grows in a Herefordshire meadow beside the Wye, a little distance below Symonds Yat.

The furrows in the bark of common elms are broad, and the ridges between them comparatively flat.

The leaves, though less rough than those of the wych elm, are coarse and leathery in texture. They are bi-serrate, and sometimes, though not always, end in a sharp point. Their length is from two to three inches, and the halves on either side of the mid-rib are slightly unequal in size

and shape. Hairs are attached to the mid-rib on the under side of the leaf, and we have seen it stated that these are almost as irritating to the skin as are those of the stinging nettle—a relative of the elm. Personally we have never experienced this. The leaf is one of the first to change colour in autumn, turning a bright golden yellow.

We have seen that the leaves of trees are provided with *stomata*. One of the chief uses of these is to enable the tree to breathe; by them it also gives off or *transpires* water in the form of vapour. The elm, with some other trees, has also water-pores at the margins of its leaves, through which water in a liquid form can be passed. Thus, should the atmosphere be fully charged with vapour and be unable to receive more, the elm can still get rid of moisture that it does not need.

The flowers, opening in March or April, are small, purplish in colour, and bi-sexual. The small one-seeded fruit is a *samara*, provided with a wing to aid its dispersal by wind. As it hangs upon the tree in spring it looks a little like a round green leaf.

The common elm is hardly a tree of the woods,

being but little grown for timber; in the Forest of Dean, for instance, it is almost entirely absent, though there are a fair number of wych elms. The common elm is rather a tree of the meadow and hedgerow. In Herefordshire, and perhaps still more in Gloucestershire, it is a very common wayside and hedgerow tree. Farmers, however, now begin to think that it is just as harmful to the crops that grow beneath it as the ash.



Hawthorn.

12. THE HAWTHORN.

WE have heard of, but have never ourselves seen, a hawthorn with a trunk twelve feet in circumference. Trees may often be found with a stem one third of that size, but the hawthorn is still more common as a hedgerow bush. It is indeed from its frequent position as part of a hedge that the hawthorn or "hedge-thorn" takes its name; "haw" being a corruption of *haeg*, the Anglo-Saxon word for hedge. In England the hawthorn has been employed for the enclosure of land since the Roman occupation, though its use for ordinary field hedges was probably not general till about the end of the seventeenth century.

Another name, whitethorn, does not allude to the flowers, but to the light gray colour of the twigs as compared with the dark bark of the blackthorn; while the familiar name of "May" announces the time of blossoming, though in late seasons it is often early June before the fields are fully fragrant with its scent.

The scent of the hawthorn is one which is welcome to us all; and it may come as something of a shock to learn that the cause of this fragrance is the same as that of the odour given off by rotten fish—a substance called trimethylamin. Such, however, is the case, and we can only hope that the reader will not in future find the hawthorn's scent less sweet for the knowledge.

The tree is long-lived, growing very slowly after its first ten or fifteen years. The bark is rough, and often inclined to scale off in patches. The branches form a dense close mass.

The thorns with which all hawthorn-gatherers are but too familiar are of different kinds—long thorns and short thorns. The long thorns form the ends of short stiff twigs which usually bear leaves; the smaller short thorns grow on shoots beside the leaves.

These thorns are a natural weapon with which the plant protects itself against its foes. Its leaves are much appreciated by horses and cattle, and, but for the thorns, they would soon be stripped from all branches within reach of these animals.

The leaves, which grow spirally upon the twigs,

are *simple*, but are deeply *lobed*. The lobes are usually three or five in number, though sometimes seven; they are toothed, and the serration is sometimes so deep that the lobes themselves appear to be lobed. The leaves are dark green, shining, and almost entirely free from hairs.

The fragrant five-petalled flowers are bi-sexual, and are fertilized by the aid of beetles, flies, and bees.

The “haw” is not a berry, as we often call it, but a *fruit* which contains a stone—usually only one, though sometimes two or even three. Inside the stone, as in the stone of other fruits, there lies the seed.

The hard, tough, close-grained wood of the hawthorn is chiefly used for walking-sticks.

Matthew Arnold has a beautiful description of a scene to which the hawthorn lends its special beauty in his *Tristram and Iseult*. Assured that it will appeal to all lovers of nature, we venture to insert it as a conclusion to this chapter :—

“The open glen was studded thick with thorns,
Then white with blossom; and you saw the horns,
Through last year’s fern, of the shy fallow deer
Who come at noon down to the water here.

OUR BRITISH TREES.

You saw the bright-eyed squirrels dart along
Under the thorns on the green sward ; and strong
The blackbird whistled from the dingles near,
And the weird chipping of the wood-pecker
Rang lonelily and sharp ; the sky was fair,
And a fresh breath of spring stirr'd everywhere."



Hazel.

13. THE HAZEL.

THE hazel is rarely given the chance to grow to be a tree ; we know it best as forming part of a hedge, or as the undergrowth in woods. Yet, if permitted, it will form a tree of twenty feet or even more in height, with a trunk a foot in diameter.

Yet, tree or bush, the hazel is a welcome sight in early spring, for it is one of the first trees to flower. Well known are its "lambs' tails," as the country children call them—the long yellow catkins which in February dance upon the twigs with every breeze.

These dancing yellow catkins are the male blossoms, which may be first seen in the previous summer, small and grayish-green. Less noticeable are the female flowers ; but they may be found, even in the depth of winter, after a few days of bright sunshine. They are not unlike tiny paint-brushes ; for, protruding from the blossom, are many little crimson threads—the *stigmas*.

The leaves are somewhat heart-shaped, broader at the top than at the base, though ending in a point—sometimes three points. Though hairy when young, they become smooth later. They are serrate, and also *unsymmetrical*, one half being somewhat larger than the other at the base.

In the bud they are simply folded once, one half being laid upon the other half. On some shoots the leaves grow in two rows only; on others the arrangement is spiral, all sides being equally foliaged.

Poplars, among other trees, will often throw out suckers from the roots and lower portion of the trunk. The hazel does this. Often the strip of root between a sucker and the main stem will decay and die, and thus the sucker becomes a detached and independent bush.

The hazel, too, is one of several trees that give *stool-shoots*. That is, if its main stem be cut down, a crop of young shoots will grow from the stump or *stool*. Indeed, we far more often see the hazel with these numerous stems than with a single trunk.

The bark is smooth, becoming rougher at the base with age. The nuts we all know well. The

wood is largely used for walking-sticks and hoops for casks.

The hazel usually bears flowers when from five to ten years old, though it may do so at an even earlier age than five. The age at which trees first produce their blossoms varies very much.

The plants we usually call "flowers" often blossom at a very early age. The sweet pea is an annual; from seed sown in March there will be flowers in June. Even the rosemary and lavender, plants which live longer than a single year, bear flowers when but one or two years old.

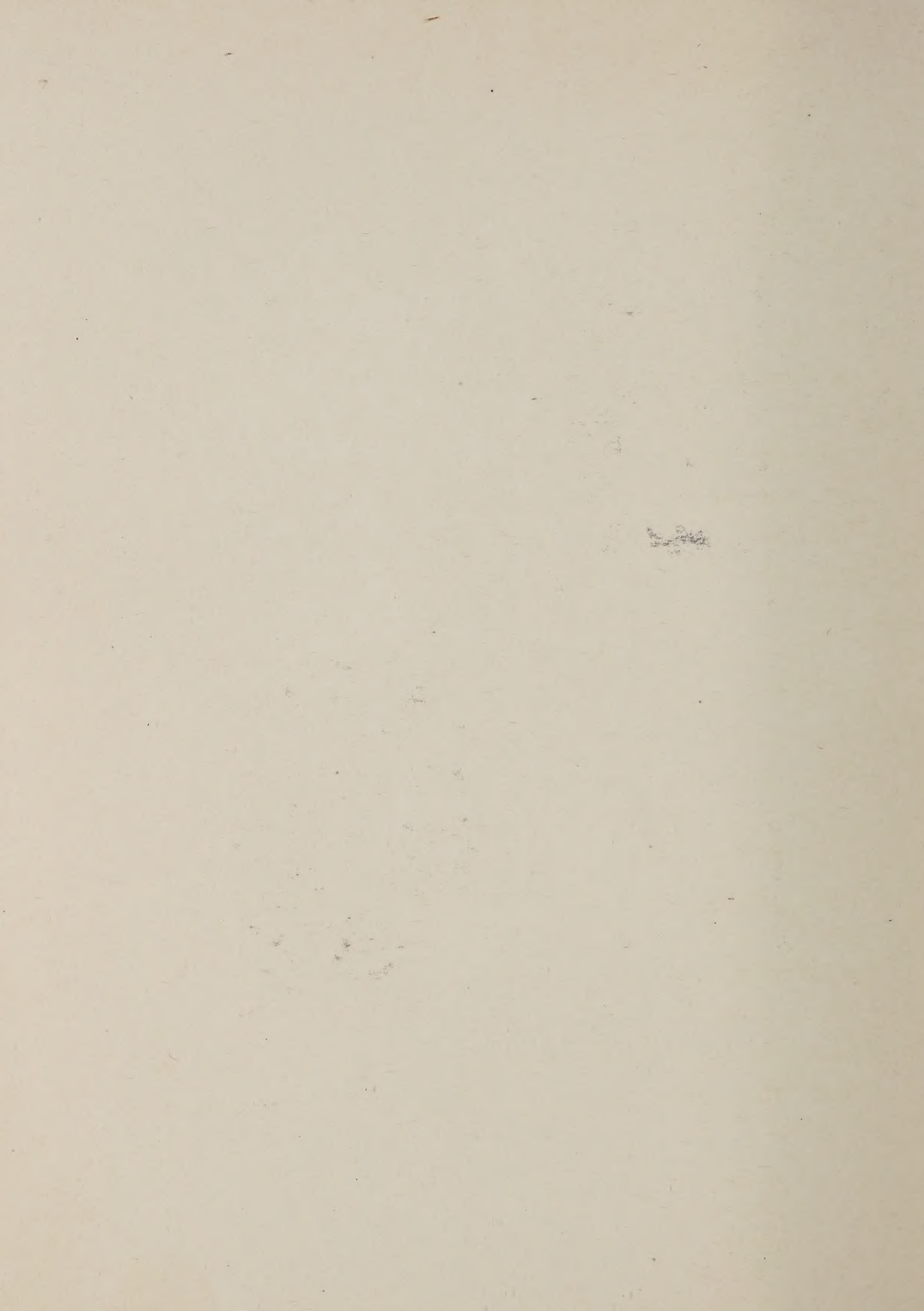
Large trees which take long years to reach full growth will not do this; they may not blossom until fifty, sixty, or a hundred years of age. Willows may sometimes flower when but two or three years old; an oak may bear no blossoms till it has been growing a century. Its usual age of flowering varies from twenty to one hundred years.

The kind of soil in which trees grow has something to do with this great variation; hot poor soils tend to make them blossom at an early age. But another cause is the tree's position with regard to light. The more light it gets, the

earlier—usually—will flowers appear. So that an oak growing alone in the middle of a meadow will probably flower many years before one of the same age standing in the heart of a thick wood where it is greatly shaded by surrounding trees.



Laburnum.



14. THE LABURNUM.

THIS tree, a native of southern Europe, has been known in England for about three hundred years ; yet it is comparatively rarely met with in the woodlands of this country, being usually confined to gardens and parks. Indeed, the writer, though familiar with many large woods and with one of our all too few English forests, has never seen the tree growing wild.

It has been suggested that the fondness of rabbits for its bark has prevented it from flourishing where unprotected ; yet, as rabbits will gnaw the bark of many trees, this explanation hardly seems entirely satisfactory.

Even in gardens the laburnum is but a small tree, rarely reaching thirty feet in height. Its form is somewhat peculiar. From a smooth gray stem the branches at first point upward, but soon curve over and hang down. From the topmost part of the curves other shoots grow upward, so that the branch system somewhat resembles a

cascade of falling water, with a jet rising from its centre. On the whole, when not clothed in early summer by its mass of blossom, the tree is not, at least to our mind, a particularly attractive one.

But the rich rain of golden blossoms, so thick as frequently to hide both leaves and boughs, goes far to atone for the tree's bare and uninteresting appearance in winter. The small stalked flowers grow in clusters upon drooping stems clothed with soft silvery hairs. These flowers are bi-sexual, and are pollinated by the help of bees. The nectar which the insects seek is hidden somewhat deep in the blossom and is not easily visible, as is sometimes the case with nectar-bearing flowers. Yet the bees' instinct tells them where to find it, and in doing so they transfer pollen from the male to the female organs. Moreover, by an arrangement too complicated to be described here, fertilization by pollen brought from a distance is made more probable than by that taken from the same blossom. This is an advantage, as we shall perhaps notice by-and-by.

The twigs are smooth and of a gray-green tint. The bark too is smooth, but after some years be-

comes cracked in transverse lines, and peels in sections from the stem.

The leaves are *compound* and *trifoliate*; instead of several pairs of leaflets, as in many other compound leaves, the leaflets are but three. They grow together at the end of the long slender *rachis* or leaf-stalk. Each leaflet is narrow and pointed, has a very short leaf-stalk or *petiole* of its own, and is silky and pale-coloured on its under side.

The seeds of the laburnum are contained in hanging pods not unlike those of the pea and bean, of which plants the tree is a relative; for it belongs to the papilionaceæ family, so called from the resemblance of the blossoms to the wings of a butterfly. There are from three to seven blackish-purple seeds in each laburnum pod; the number is often six, and on a pod being opened the seeds will be found arranged alternately, three being attached to one side of the pod, and three to the other. Within the pod is a downy lining, serving the seeds as a protection from frost.

The seeds are strongly poisonous, and as the pods often hang well within reach of small fingers, and are not unattractive to inquiring minds, the

tree is not altogether desirable in a garden frequented by children.

The wood is hard, and very dark in colour ; for this latter reason it is often used as imitation ebony. Musical instruments, ladles, and cups are also made of it.

Undoubtedly the tree is beautiful in early summer, when, as Cowper truly said, we see it

“ Rich in streaming gold.”

But that rich early summer beauty is soon over, and for ten months of the year it shows itself, to many people's taste at least, an unattractive and ungainly tree.



Larch.

15. THE LARCH.

THIS tree, a native of the Alps and other mountainous districts of Europe, is a comparative new-comer in Great Britain, where it was introduced about two hundred years ago. There is a story told of how two or three young larches were sent from the Continent to a nobleman in Scotland. He handed them over to his gardener, giving the man many cautions to take great care of them. The Scots gardener, knowing nothing of their character or requirements, placed them in a warm greenhouse, where they soon began to pine away. They were thought to be dead, and were thrown out on a rubbish heap. There one of them revived, took root, and grew to be a stately tree.

The larch does best on hill-sides facing towards the north or east, thriving on stony well-drained soils. Some of its numerous roots are horizontal, others perpendicular.

There is no other European tree quite like

the larch ; for though it is a *conifer*, bearing cones, and having needles for foliage, yet it is *deciduous*, shedding that foliage each autumn. So that, in winter-time at least, it cannot be mistaken for another tree.

Nor, even in summer, is it difficult to distinguish the larch from a spruce or cedar. There is no dense dark shade beneath it, for the foliage is thin. Its needles, too, are of a paler green ; in spring their young fresh tint is one of the most beautiful the woods can show. Often the boughs droop slightly from the trunk ; but whether drooping or quite horizontal, they are seen to turn up slightly at the ends. The trunk is tapering and straight ; a well-grown larch is a most graceful tree.

Most of the needles grow upon the twigs in tufts or clusters, twenty, forty, or more needles in a tuft. On other shoots the needles are solitary ; they are comparatively soft, and almost flat.

Very charming and easily noticed are the female blossoms, for their colour is a purple-red. They grow erect upon the branchlets drooping from the boughs. The small male

flowers also grow erect, but are yellow. Both male and female flowers open about the time the needles first appear.

The little cones are, like the flowers, erect. Their scales do not drop off, and so the seeds are not at once released; it may need wind or the pecking of a bird to shake the cone sufficiently to set them free. Old cones sometimes remain for years upon the tree.

It has been noticed that a solitary larch does not give fertile seed, although both male and female blossoms grow on the same tree. This seems a proof of what we shall see presently—that it is better, or may be even necessary, for female flowers to be fertilized by pollen from another tree.

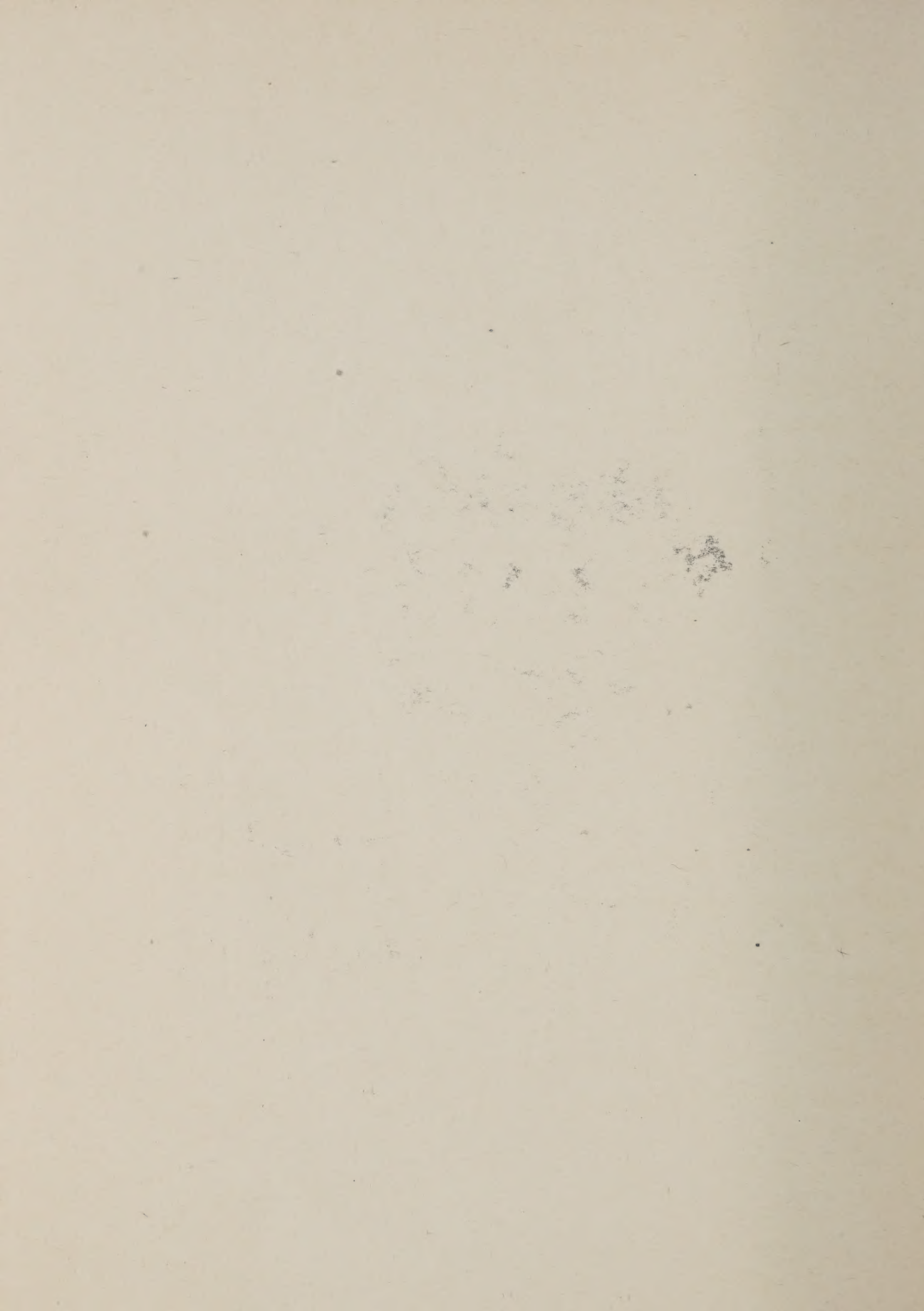
To-day there are tens, perhaps hundreds, of millions of larches growing in this country, for this tree is one of the most useful we possess—quick-growing, yielding a valuable wood and tall straight stem. It is a great “light-demander.”

Unhappily it seems quite possible that a day may come when we shall have to give up growing the larch; it is the victim of a host of enemies. Hardly a single English plantation of

the tree is free from larch canker, a destructive fungus which attacks it. Its many insect foes include the caterpillar of the larch-shoot moth which bores into the shoots, while the larch aphid and the larch miner-moth attack the needles.



Lime.



16. THE LIME.

THERE are three species of lime in England, or, as some botanists prefer to say, three varieties of one species. They are the large-leaved lime, the small-leaved, and the common or intermediate lime. One of the few differences between them is the size of the leaves. Those of the large-leaved lime may be four inches broad, those of the small-leaved about half that size.

It is generally thought that the lime was introduced to this country by the Romans. The large-leaved tree died out, and was re-introduced a century or so ago. The small-leaved lime has been cultivated from a time beyond the memory of man, and is as hardy as our native trees.

There is one great difference between the lime and some of the trees which we have so far examined. It bears *bi-sexual* flowers; we shall not find separate male and female blossoms when the flowers open in late June or early in

July. Both sexes are combined in the same blossom.

This leads us to note something of interest regarding trees generally. It is considered better for the female blossoms to be fertilized by pollen from a different tree of the same kind; the seed produced is likely to yield stronger plants. The pollen of some trees is carried easily for a considerable distance by the wind, as is made possible, for instance, by the air-bladders on the pollen of the Scots pine, a tree which we shall notice presently.

Again, the flowers of many trees are attractive to insects, and the pollen is carried by such visitors from flower to flower and from tree to tree, thus causing what is called *cross-fertilization* by the help of insects.

At first sight it might seem likely that the flowers of the lime would be *self-fertilized*; that pollen would pass easily from the male to the female portion of the same blossom. But this is not the case. Firstly, the pollen from the male portion of the flower is ready before the female part of the same flower is prepared to receive it. Secondly, by the drooping position

of the flowers it is often impossible that pollen should be so transferred. Thus the disadvantages of self-fertilization are avoided.

Lime flowers are fertilized by the help of insects—chiefly bees. The drooping greenish-yellow blossoms contain quantities of nectar which attracts the bees. They, passing from one blossom to another, carry pollen to distant female flowers ready to receive it.

This makes an avenue of these fine trees a most delightful haunt, for when the clustered flowers are upon the lime in summer there will be a steady hum of bees among the boughs from dawn to dusk. And, too, the flowers have a strong and fragrant scent.

The leaves are heart-shaped, with serrated edges, and they end in a sharp point. This point is called *acuminate*; it is drawn out abruptly from the curving margin of the leaf. The lime leaf turns to a bright yellow gold in autumn; but that glory is soon past, for they are some of the first leaves to fall. They are, too, late in spring, not opening until May.

The buds are plump, a contrast to the long and slender buds of the beech.

The lime has many branches and a thick foliage; its bark is smooth, but, like the bark of many other trees, grows rough with age. It often throws out *epicormic* shoots—shoots from the lower portion of the stem. The lime may reach a height of seventy or eighty feet. It is a long-lived tree.

The wood is finely-grained and light. It was upon this wood that Grinling Gibbons, the famous Dutch wood-carver of the seventeenth century, chiefly worked. In England it is more for ornament than use that limes are grown.



Common Oak.

17. THE OAK.

WHEN speaking of the common elm we pointed out some differences between that tree and the wych elm. Here, in the same way, it must be stated that two varieties of oaks are common in England : the pedunculate oak and the sessile oak.

Let us state first those differences from which the trees are named. In the pedunculate oak the acorns are raised from the twig upon a little stalk or *peduncle*, while the leaves have a very short leaf-stalk or none at all. In the sessile oak the acorns are *sessile*, or seated, on the twig, but the leaves have distinct leaf-stalks. It must be remembered, however, that many *hybrids*, or crosses of these forms, are to be found, which sometimes renders decision as to the variety difficult.

A further difference is that, as a rule, the sessile oak has a taller stem and less spreading branches than the pedunculate variety. Yet a pedunculate oak may take this form if grown in crowded woods.

Of other varieties, the turkey oak, and the holm or evergreen oak, we need not speak here.

The great need of the oak for light is shown by the way in which its leaves are grouped together at the ends of twigs, in the position where the sun's rays are best obtained. They are some of the latest leaves to open in spring, when they show a beautiful reddish tawny colour, turning later to dark green. Their shape is different from any we have yet noticed; they are deeply notched or *lobed* into six or eight divisions, but they must not be confounded with a *compound* leaf.

In the pedunculate oak the leaves are entirely hairless, and are blunt at their bases; while those of the sessile oak often show hairs upon their under surfaces, and have a tapering base. They are also more leathery in texture.

The oak may be one hundred feet or more in height; but usually more noticeable features than its height are the spreading of the massive boughs and the great girth of the rough, deeply-furrowed stem. Specimens have existed in England having a trunk seventy feet in circumference. A famous Gloucestershire tree, the Newland oak, standing on the outskirts of the Forest of Dean, measures forty-

four feet in girth at a height of six feet from the ground. The tree, though entirely hollow, and estimated by competent judges to be from twelve to fifteen hundred years of age, still puts forth leaves each spring.

This thickness of its trunk and the weight of the massive branches demand a firm hold on the ground; consequently the oak sends down into the soil a strong tap-root. In poor or shallow soils where it finds this impossible, it will not grow.

A tree whose life may last a thousand years or more has little need to hurry with its work; the oak may be from sixty to one hundred years of age before its flowers first appear. The blossoms are *uni-sexual*—male and female being distinct, and both are borne on the same tree. They usually open with the leaves in April or the early days of May. The weaker twigs produce male flowers only, while on stronger shoots both sexes may be found. The male catkins are drooping, and greenish-yellow in colour; the female blossoms are erect, and somewhat bud-like in shape. The female flowers of the pedunculate oak have stalks, which ultimately become those of the acorns.

Besides the excellent quality of its hard, close-grained, enduring wood, the oak is valued for its bark. This contains tannin, and is the best bark for the tanning of leather.

We all love the oak, for it is, above all other trees, the national tree of England. No longer, indeed, is it true that "Hearts of Oak are our ships"; but that is no reason why the hearts of the brave men who sail in vessels of steel and iron under the English flag should not continue to be as true and stout as this old monarch of the English woods.

A great change has taken place in the planting of oaks in this country during the last fifty years or more. Formerly it was the pedunculate oak which was chiefly planted. Why? Because the forester had at that time one thing chiefly in his mind—the growing of timber that would make good ships. Now, the pedunculate oak, as we have seen, grows in a spreading form, forming large branches which, in their turn, gave many crooked "knees." These "knees" were valuable to shipbuilders for the curved portions of their vessels' hulls.

Now we no longer build our ships of oak. The

“knees” are useless ; what the timber-buyer wants are long straight planks and beams. And so the sessile oak is grown because it forms a taller, straighter stem from which such timber may be cut.

18. THE PEAR.

WE need not look for the wild pear in either Scotland or the extreme North of England, for in those parts it does not grow. Whether or no it is really a native English tree of the Midlands and South is doubtful. Native or not, we are glad to have it, for, like the cherry, its white blossom gives an added beauty to the woods in early days of spring.

Few persons are likely to confuse the fruits of the apple and the pear. Yet it must be remembered that a pear, though usually having a broad end which tapers to the narrow neck, may at times be almost as round as an apple; moreover, pears of both shapes may be found upon the same wild tree. But there is one invariable difference: an apple always has a cavity or indentation where it joins the twig; this peculiarity is never shown by the fruit of the pear, and therefore no mistake is possible upon a close examination of the fruit.



Pear.

The tree may be from twenty to fifty feet in height, with rough and furrowed bark. In shape the pear often tapers in pyramid form, and the main stem can usually be traced nearly to the top of the tree. The ends of the upward-pointing branches often display a curious form, first drooping, then once more rising. Many of the shoots end in blunt thorns, though in the cultivated varieties of the pear these are generally absent, and they are very rarely to be found in the apple.

The leaves of the pear, though often varying slightly in form, are more or less egg-shaped, and have pointed ends. The leaf-stalk, the *petiole*, is long, usually being about the same length as the mid-rib of the leaf itself. If there are teeth on the margins they are small and blunt; but they are often entirely absent. The young leaves sometimes show a tendency to be *lobed*—divided into sections. They grow alternately upon the twigs, but on young shoots not a year old they are often grouped in clusters.

The *venation* of the pear-leaf is elaborate and beautiful, many small veins forming a fine but distinct network. The autumnal colour is yellow,

either golden or reddish : the fading tints of pear-trees add peculiar beauty to a woodland scene.

The snowy five-petalled blossoms, in which there is sometimes, but rarely, a trace of pink, are bi-sexual. The pear is a tree in which both cross-fertilization and self-fertilization take place ; cross-fertilization at first, for the female portion is ready before pollen from the same blossom is available, and thus the needed pollen must be brought from distant flowers. But in a few days self-fertilization may occur, either with or without the help of insects which visit the flowers. Probably this self-fertilization does not result in the production of good seed. In some varieties of garden pears the female portion of the flower will not accept pollen from the same blossom.

The wood of the pear is fine, close-grained, and heavy. Though naturally of a ruddy colour, it readily takes a black stain, and for this reason it is sometimes used as an imitation of ebony. It was at one time in some request for wood-engraving, though never considered equal to boxwood for that purpose.

Another species of English wild pear, not often found except in the county of Cornwall, has oval leaves which are rounded at their base. The fruit is very small, and often almost perfectly round.

19. THE SCOTS PINE.

THIS tall ruddy-stemmed tree, with its spreading crown of dark green foliage, is often called the Scotch fir ; Scots pine, however, is its proper name. It is a native tree in the North of England and Scotland, and is now common in most parts of this country.

It is an evergreen, like most coniferous trees—not *all*, however, as we have seen ; for the larch is *deciduous*. The foliage is of needles, which contain much resin, as indeed does the whole tree. The needles grow in pairs upon the twigs, and are often slightly curved, with many small teeth ranged along their sides. The shape of the section of a needle is somewhat peculiar, being semicircular ; the upper surface is flat, while the lower side is rounded. The needles are usually about two inches long, but may be as much as twice that length. The upper side is greenish blue in colour, while the lower is a pure dark green. Needles remain upon the tree about three years.



Scots Pine

The Scots pine is a tree which adapts itself to circumstances. Where the soil is deep it sends a tap-root far into the ground ; on shallow rocky soil the roots spread horizontally and no tap-root is formed. Then, naturally, the Scots pine's hold is less secure, and it is liable to be blown down by wind.

The bark is copper-coloured, and is shed in scales, revealing a fresh, brightly coloured portion underneath. That on the lower part of the trunk is thick, and dark in hue.

The yellow egg-shaped male flowers are some quarter of an inch in length, and grow in groups. The female flower is a green, or sometimes reddish, cone, growing singly or in pairs.

If we take a grain of the fine yellow pollen produced by the male flower, and examine it through a microscope, we shall discover that there are attached to it two tiny bladders filled with air. These bladders make the pollen buoyant, so that it can float upon the gentlest breeze, till it has found and fertilized some female blossom.

The seeds, too, which are scattered from the cones when ripe, each have a wing ; but when

a seed falls to the ground this wing drops off. Two seeds lie on each fertile scale of the cone.

One peculiarity of the cone of the Scots pine is that its surface—that is, the surface of the scales by which it is covered—is dull, not polished as are many other cones. The cone hangs down upon the twig, and is about two inches long.

This cone takes many months to ripen and to shed its seeds. It is fertilized during the summer, but it does not shed its seed that year. A few seeds may be ripened in the autumn of the next year, but usually it is not till the following spring—nearly two years after the cone was formed—that all its seeds are freed. Like the cone of the spruce, those of the Scots pine do not shed their scales, but retain them till they fall.

The tree produces very useful wood—the wood we call “red deal.” Yet most of what is used in England comes from the Continent. There the Scots pine is chiefly grown in forest, closely ranked. This prevents branches from being formed upon the tall straight stem, and thus the planks are free from knots. Moreover, the colder climate of the North of Europe causes

the tree to yield a harder wood, more closely grained.

A group or avenue of these great trees, each tree perhaps ninety or a hundred feet in height, is a fine sight, their ruddy trunks contrasting with the sombre foliage of the crown. The trunk is often bare of branches almost to the very top. The Scots pine has been known to live five centuries and more.

20. THE WILD PLUM.

IT does not greatly surprise us to learn that the plum and the cherry belong to the same family—the rosaceæ; for, as no one needs to be reminded, both bear a juicy fruit which holds a stone. But the plum has some other relatives which may appear rather more strange at first sight. The raspberry and strawberry; the apple and pear; the rose, blackberry, and hawthorn; even the fragrant meadowsweet—all these, and others still, belong to the rosaceæ family.

Three species of wild plum are found in England: the sloe or blackthorn, the bullace, and the true wild plum. From one or other of these are descended all our choice garden plums, just as our finest apples have been gradually improved from their one common ancestor, the crab.

In many points the plums resemble their relative the cherry, but there are some differences. There



Plum.

is, for instance, a difference in the fruit, besides the obvious one of size and flavour.

A cherry freshly plucked from the tree is smooth and shining. A plum is smooth, but does not shine, for it is covered with a waxy *bloom*. This bloom is soon rubbed off by handling, but is very noticeable when the fruit is freshly picked. There is a similar bloom on grapes.

Then, too, after a plum is eaten, a *rough* stone is thrown away. That of the cherry is smooth.

When we eat a plum or a cherry we break the thin skin with our teeth, enjoy the juicy pulp within, and throw away the stone. But, using scientific language, we must say that we pick from the tree the *pericarp* which contains the seed; that we eat the *mesocarp* or flesh, and probably the *epicarp*—the skin—as well; and finally throw away the *endocarp* or stone. Inside that *endocarp* there lies the seed, wrapped in an inner skin.

Probably the species of wild plum most familiar to the reader is the blackthorn or sloe. We see its white five-petalled blossoms in the month of March or early April, usually some little time before the leaves appear, and forming a strong

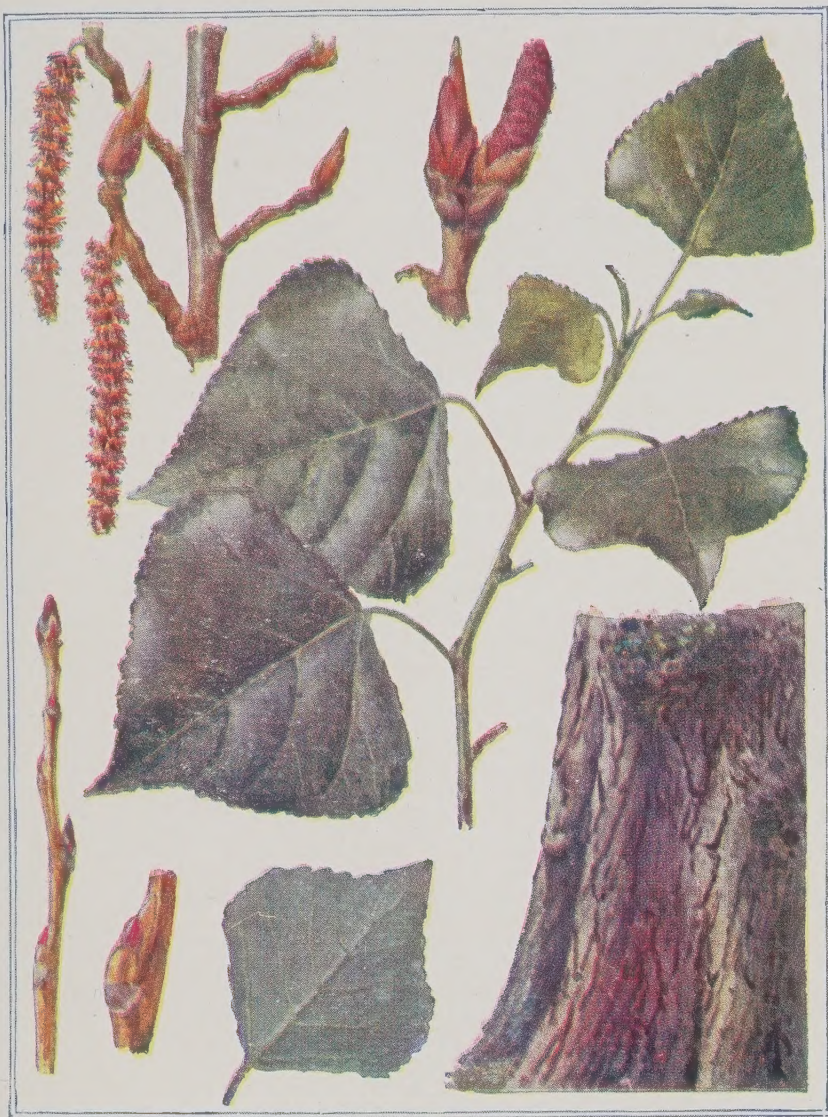
contrast to the blackness of the twigs. And, if we try to pick those flowers, or to scramble through the hedge of which the blackthorn often forms a part, we shall soon feel the long sharp thorns that terminate its shoots. Often the bullace has thorns also, but the true wild plum is nearly always without them.

The three fruits differ in size. That of the sloe, very sour at first but more palatable later, is somewhat larger than a pea, and is blue-black in colour. The fruit of the bullace is larger, often of much the same hue, though sometimes yellow. Both fruits are round or nearly so.

The fruit of the wild plum is oval, nearly an inch and a half in length, and sometimes red.

All three wild plums are bushes, or at most small trees. In the bare woods their snowy blossoms, bright among leafless trees, or the dark shade of evergreens, are one of the most pleasing sights of early spring.

Blackthorn yields strong and very handsome walking-sticks. The teeth of hayrakes, too, are made of blackthorn, for the wood is tough and hard, and stands rough wear.



Lombardy Poplar.

21. THE LOMBARDY POPLAR.

THIS tree is merely a variety of the black poplar, which is in its turn a near relative of the aspen ; therefore something of what has been said about the aspen applies equally to the Lombardy poplar. The leaves of the Lombardy poplar are, however, generally decidedly pointed, and its bark is more deeply furrowed than the aspen's bark. In several respects it is a very striking and unusual tree.

It cannot well be mistaken for any other, for its branches all point upwards, growing parallel with the stem. Though they often leave the trunk horizontally, yet they at once turn upwards and grow perpendicular. They are all comparatively small.

The tree is thickly clothed with branches almost to the ground ; often the lowest are a foot or less above the soil. But if the tree is growing close to others, then the lower boughs

fall off; they will not grow if shaded from the light.

These low-growing boughs at first sight make the tree a tempting one to climb. But whoever attempts to do so will soon find his feet wedged fast in the narrow foothold given where the branches join the stem.

This perpendicular growth of the branches gives rise to a very interesting and instructive fact. Leaf-buds are formed all round the upright twigs; some of the buds are on the sides turned outwards towards the light, others face inwards towards the trunk. Only those facing outwards will grow into leaves; the others remain undeveloped owing to lack of light.

But if, in early spring, we bend a branch down to a horizontal position and secure it so, what happens then? Those buds which formerly faced inwards are now pointing upwards to the sun, and it is they which will develop into leaves; the others, now placed underneath the branch, will not do so.

Often a Lombardy poplar may be seen with *suckers* sprouting from the roots below the soil. Some trees throw up these suckers from the roots

and lower portion of the trunk, others do not. Most poplars give off suckers freely in this way.

Nearly all the Lombardy poplars in England have sprung from such suckers, or have been raised from cuttings; they cannot well be grown from seed, for in this country there is practically none.

We have already seen that some kinds of trees have male and female flowers growing on the same individual tree; in other cases the two different sexes grow on separate trees. Now the Lombardy poplar bears its male and female flowers upon separate trees, and it happens that nearly all the specimens growing in England are "male" trees. Therefore there are no female flowers, and as a consequence there is no seed.

The tree is a fast grower; it is said that it may reach a height of sixty feet in twenty years. Its flowers are catkins. It is not a native English tree, though it has been in England for about a century and a half. It grows freely in the district of Lombardy in Italy, and hence its name; but there is some difference of opinion as to whether it is a true native there.

Though the Lombardy poplar is often seen in England, it is much more commonly grown in many continental countries of Europe, where it is seen in long lines bordering roads. Our English taste prefers more widely-branching, spreading trees ; yet a long row of poplars, straight, erect, and pillar-like, has a peculiar beauty hardly seen in any other tree.



Spruce Fir.

22. THE SPRUCE.

THE spruce is not an *indigenous*, or native, tree in England, but was brought to us from the continent of Europe some four centuries ago. Even to-day it is from Norway that we chiefly get its useful wood.

It is, like most *conifers*, or cone-bearing trees, an evergreen ; its leaves, or needles as the leaves of conifers are called, do not fall in the autumn, and the tree is never bare. Some few conifers, however—one of which, the larch, we have already noticed—are *deciduous* trees, shedding their leaves each year.

But the same leaves do not, of course, remain upon the branches of an evergreen throughout its life ; they fall from time to time, and fresh leaves take their place. Some evergreens retain their leaves for two years, others for eight years or even ten. The needles of the spruce remain upon the tree from five to seven years—some botanists say more.

Those who have seen a Christmas-tree have seen a spruce, for it is the tree mostly used for that festivity. And we have seen and handled spruce-wood in another form ; it is now largely made into "wood pulp." From that wood-pulp is manufactured paper, upon which are printed many newspapers and magazines. Spruce-stems, being tall and straight, are in request for telegraph-posts, ladders, and ships' masts. A well-grown Norwegian spruce may be from one hundred to one hundred and fifty feet high, and from three to six feet in diameter near the ground. But in our country the tree does not reach so great a size ; some years ago the tallest spruce in England measured one hundred and thirty-two feet high.

The spruce-tree has a very regular and even form. The main branches leave the stem at right angles ; as they grow longer they soon droop, the lowest often sweeping to the ground. From the main branches smaller branches grow to right and left.

The needles grow in a thick crowd all round the twigs—above, below, and on each side. Each needle grows separately, not grouped in pairs or clusters as we find to be the case with some

conifers. The needle is from half an inch to one inch long, with a hard yellow point, and is somewhat square in section; rolling it in our fingers we can feel that it is neither round, nor flat as is a blade of grass, but that it has four sides.

The blossoms of large trees are often small and inconspicuous, but we shall find them if we look for them.

The small male flowers of the spruce are strawberry-like red buds, tinted with yellow by the pollen which they bear; the female blossoms are red cones about two inches long.

After the female blossom comes the cone, five or six inches long and rather more than one inch thick. Under its many scales are hidden small winged seeds.

Though the spruce-cone is full-grown in October, its scales do not open and allow the seeds to scatter till the following spring. A few months later the cone itself falls from the tree, with all its scales still clinging to it.

Spruce-bark is grayish-red, comparatively smooth. The roots are horizontal; there is no strong "tap-root" striking deep into the ground

and taking a firm hold. From this it happens that the spruce is very easily blown down.

In a great English forest which I know there is a splendid avenue or "drive" of these fine trees; for perhaps a mile or more you walk upon soft turf between two close-ranked lines of spruce-trees fifty feet or so in height. In summer that long "drive" is always cool; in winter not the roughest wind can penetrate between the thick shield of the drooping boughs. And, too, the great trees seem to deaden sound; so great the sense of loneliness and silence that one seems within a long green grave.



Sycamore.

23. THE SYCAMORE.

WE must not, as some people do, confuse the sycamore with the plane. Both trees indeed bear broad five-lobed and *palmate* (hand-shaped) leaves, and both have bark which frequently scales off, giving the trunk a mottled appearance. But the sycamore is no relation of the plane; it is a variety of maple.

Like so many trees now common in England, it is not a native English tree; but it has lived here for about five hundred years, and flourishes contentedly in every part of the country. It takes kindly to high and exposed situations, and even to the coast, where some deciduous trees are killed by the sea-air.

Some trees have leaves which, while within the bud, are folded; others are rolled, while some lie almost flat. Those of the sycamore are folded as we fold a fan.

Leaves of some trees again are *glabrous*—smooth and free from hairs; others are hairy or

pubescent leaves. The upper surface of a sycamore-leaf is dark green, shining, free from hairs, and somewhat wrinkled. On the under side the leaf is hairy when quite young, and the colour is pale green, or sometimes purple-red. The leaf-stalks, too, are often red.

The leaves are large, six or eight inches broad. They grow in pairs, each leaf of a pair being on an opposite side of the branch. Moreover, each pair of leaves grows at right angles to the next pair, so that all sides of a branch are equally clothed with leaves.

It follows, therefore, that, on a horizontal branch, a row of leaves will be upon its under side, and therefore partly in the shade. But such leaves will generally be found to have a larger surface than the upper ones, and also to twist themselves into such a position as to obtain as large a share of light as possible.

The leaves turn a pale yellow in the autumn, and are often marked with black patches, caused by a fungus which attacks the tree.

Being a member of the maple family, the sycamore is related to the American maple from which sugar is obtained; and there is sugar in

the sycamore itself. This often comes to the surface of the leaves, making them sticky ; then there cling to them the smoke and soot of towns, the dust of country roads.

The drooping, green collections of flowers, called *inflorescences*, are comparatively large. Some of the flowers in these groups are male only, while others are both male and female. Both sexes grow on the same tree.

The sycamore's small *fruit* is winged. Winged fruits or seeds help greatly in the distribution of a tree. An acorn or a chestnut cannot travel a great distance from its parent tree, even if helped by a high wind. But small winged fruits, like those of sycamores and other trees, may float long distances upon a very moderate breeze, and thus young trees spring up a mile or more away.

A well-grown sycamore may reach a height of eighty feet in less than sixty years ; yet, though so rapid in its growth, it is a fairly long-lived tree, having been known to flourish for two hundred years and more. In open spaces it will form broad spreading branches, giving a good shade.

The wood is light in colour, and when small is of no great value except for articles in which

whiteness is a consideration. Large stems, however, sometimes command high prices, being used for rollers in calico mills.

We all know who once climbed up into a sycamore tree in order that he might see a procession which was passing by—Zacchæus. But it is probable that the tree into which he climbed was not the English sycamore we know. It was most likely a large and spreading species of fig-tree which grows in Palestine and other parts of western Asia, but not in England.



Walnut.

24. THE WALNUT.

THIS most delightful tree is known to us by a misleading name; we shall look in vain to find it growing, like plums or peaches, trained against a wall; and its so-called "nut" is really a stone-fruit, or, to use the correct botanical term, a *drupe*. Walnut is a corruption of Walsh or Welsh nut, meaning foreign nut; and the name was no doubt given to the tree when first it came to England several centuries ago. Its Latin name, *Juglans*, is a contraction of *glans* Jovis, or the fruit of Jove.

The trunk often grows to a considerable thickness, and, with age, the smooth bark becomes covered by a net-like pattern of grooves. The tree may reach a height of from forty to sixty feet, with wide-spreading, crooked branches.

Like other trees, however, its shape and height depend to some extent on its situation. In a Gloucestershire garden of which we enjoyed the possession for some years were two walnut trees. One, a comparatively young tree, stood in an open

situation, and its branches spread out far and wide. The other, a much older tree, had grown up among yews and other evergreens. Eager to escape their shade and reach the light, it had shot up into a tall and narrow tree, in shape much like a common elm.

Few trees possess a more delightful leaf. Dark green when fully opened, it is russet-coloured on its first appearance from the bud. The leaf is *compound*, and at first sight might be mistaken for a leaf of ash. But while the leaves of ash are opposite upon the branch, those of the walnut are spirally arranged. The leaflets, usually from five to nine in number, are in pairs, and generally there is a single leaflet at the end.

Their position in the bud is interesting; each half of the leaflet is rolled towards the mid-rib, with the upper side inwards. The *venation*, too, is noticeable for its beauty. All leaves have veins which branch from either side of the mid-rib. In many leaves these veins extend to the edge of the leaf; but in the leaflets of the walnut each vein, just before reaching the margin, curves round inwards.

The walnut blossoms towards the end of April

or in early May, about the same time as the leaves unfold—sometimes before. The male blossoms form drooping catkins; the females are small spikes, erect upon the twigs. Fertilization is effected by the wind.

As we have said, the walnut bears no nut, but *fruits*. The inner portion, which we eat when it is ripe in winter, is the stone; the part surrounding it, although not edible till pickled, is the *mesocarp* or flesh.

The wood, the leaves, especially the *pericarp*, are rich in *tannin*; it is this which makes dark stains upon our fingers when we handle leaves or fruit. It also gives its rich brown colour to the wood, which, though of rather a coarse grain, takes a fine polish and is used for furniture. Being light and tough, it is also used for the stocks of rifles and sporting guns.

The pith of the walnut—the inner portion of the boughs and twigs—differs from that of almost any other tree in being divided into distinctly marked compartments; it is therefore known as “chambered” pith.

Though the walnut grows in many parts of England, the fruit will not ripen in the colder

northern counties. In parts of Gloucestershire it is a fairly common tree. It is generally said to yield a good crop not oftener than every alternate season, but trees known to us often gave good crops in successive years.

THE END.



Foxglove.

OUR BRITISH WILD FLOWERS

BY

ARTHUR O. COOKE

THOMAS NELSON AND SONS, LTD.
LONDON, EDINBURGH, AND NEW YORK

INTRODUCTION.

EVERY one loves flowers, or at any rate we rarely meet with people who deny that they do so. But there are two ways of loving flowers. One is merely to admire their beauty of colour, their fragrant scent, or graceful form, without knowing anything of their nature or mode of life.

The other and the better way is to admire flowers intelligently, studying them at the same time—giving attention to a specimen at different stages of its growth, noticing stem or leaves when they first pierce the ground, examining the still unopened bud, the full-blown flower, later on the seed. In this way, and by reference now and then to books, the flower-lover comes to learn the inner nature of his favourite plants. He will not love them less, but more, for knowing their structure well.

It is not even necessary to live in the country to enjoy wild flowers. A daisy may be found

growing in an area, or a dandelion on the top of some old wall. And what more lovely flowers than the golden dandelion can be seen?

This little volume will perhaps help some reader to begin this study of wild flowers. It is not meant to be exhaustive—its short chapters will not teach all there is to know, even about one single plant. But they will tell a little of each plant described, laying a small foundation stone on which much fuller knowledge may be built.

There are a few scientific terms used; this is indeed almost necessary, and in any case the student of botany will need to know them when he studies other books. But in this little book the meaning of each technical word is explained, and not too many of them are employed.

CONTENTS.

1. THE BUTTERCUP	7
2. PINK AND WHITE CAMPION	11
3. HEATH AND HEATHER	15
4. THE COWSLIP	19
5. THE HONEYSUCKLE	23
6. THE POPPY	26
7. THE BIRD'S-FOOT TREFOIL	30
8. THE SPEAR THISTLE	34
9. THE STINGING NETTLE AND THE DEAD NETTLE	37
10. THE HAIRBELL	41
11. THE DOG-ROSE	45
12. THE HAWTHORN	49
13. THE FURZE	53

14.	THE FOXGLOVE	57
15.	THE GERMANDER SPEEDWELL	61
16.	THE DAISY AND OX-EYE DAISY	64
17.	THE HERB-ROBERT	68
18.	THE LESSER CONVULVULUS	71
19.	THE WOOD ANEMONE	74
20.	THE SWEET VIOLET	78
21.	THE DANDELION	82
22.	THE PRIMROSE	86
23.	THE FORGET-ME-NOT	90
24.	THE WOOD HYACINTH	94



Buttercup.

OUR BRITISH WILD FLOWERS.

I. THE BUTTERCUP.

SOME of us are old enough to remember a little rhyme which may be quite unknown to children of to-day ; it thus began—

“Buttercups and daisies,
All the pretty flowers.”

I have sometimes thought that if the daisy could speak, it might object to being thus linked in poetry with the buttercup. Dirt has been called “matter in the wrong place ;” and in the same way what we call a “weed” may be defined as a flower in the wrong place. Even a rose-bush in the middle of a field of corn might well be called a weed. A buttercup or

daisy is a weed if growing on a lawn. But the daisy is a comparatively innocent intruder, while the flaunting yellow buttercup may sometimes do real harm.

But, first, what is a buttercup? There are at least two plants which have some right to bear that well-known name: the bulbous crowfoot, and the upright meadow crowfoot. Both plants are very similar in many ways, and both are often known familiarly as buttercups. It is the upright meadow crowfoot which our artist has drawn for us here.

Let us explain its disagreeable qualities. Many ranunculi, to which *order* of plants the crowfoot tribe belongs, are poisonous; they possess, both in their leaves and stems, an acrid, biting juice. The meadow crowfoot, like its relative the bulbous crowfoot, has this juice. Cattle, pigs, and horses usually shun it when they find it growing among the meadow grass; and cattle which have chanced to eat it, being too hungry to be careful what they touched, have sometimes become afflicted with sore mouths and tongues. It is said

that sheep and goats are less dainty ; but, then, there are few things which a goat will not eat !

So powerful is this juice that people with tender skins are sometimes affected by merely carrying a bunch of these attractive flowers in their hands. When cut and dry the plant becomes harmless, from the disappearance of the juice. But even then the farmer does not welcome it in hay, the stems being hard and tough.

Still we admit it is a very handsome flower. Each blossom has five shining yellow petals, having their outer edges rounded, but being wedge-shaped at their base. Even this poisonous plant has nectar in its flowers.

The root-stock, or main portion of the root, is short and somewhat twig-like in its shape ; that of the bulbous crowfoot, as we may gather from its name, is a small bulb. The round and upright stems of the meadow crowfoot grow from two to three feet high ; it is the tallest member of its tribe.

Leaves grow both from the lower portion of the plant and also on the flower-stems. The

lower leaves are deeply cut into three separate sections, and each section is again indented deeply in its turn. These leaves grow on leaf-stalks.

The leaves that grow upon the upper portion of the flower-stems are smaller, and less regular in shape; so small are they, indeed, that often they are nothing but mere lines, and are called *linear* leaves.

The upright meadow crowfoot is abundant over all our land. Though chiefly noticeable in the summer, it sometimes continues flowering late into the autumn of the year.



Pink and White Campion.

2. PINK AND WHITE CAMPION.

SEVERAL varieties of campion are found in England; but the two illustrated here, the pink and the white campion, are perhaps the most often seen. Though the two plants are similar in many ways, yet there are certain differences between them. We will speak of the white campion first.

It is a common plant, and will be found in hedgerows almost everywhere; but never, it is said, among the meadow grass. The root-stock is most usually biennial, dying quite away after the second year of life. From the root-stock grow stems some two feet high, bearing both flowers and leaves.

The leaves are opposite each other, growing in pairs. The lower ones are large and broad, and furnished with leaf-stalks; those higher up are narrow, pointed, and are also *sessile* on the stem—that is, they grow directly from it, having no leaf-stalk. Both leaves and stem are thickly

clothed with hairs; indeed the whole plant, with the exception of the flower, is rather coarse in appearance and texture.

That flower is delightful—a large, pale, five-petalled blossom, usually pure white, often as much as a full inch, and even more, in breadth. Sometimes the colour is pink; but even when that is the case, the plant must not be taken for pink campion, which in its turn will sometimes bear white flowers.

The petals of the white campion are each cleft or notched in the middle of their outer edge. They are best seen at dusk, for it is then that they are fully open, and then also that they shed a faint sweet scent around. At night, against the sombre grass or foliage of some wood or hedge, these snowy, fully-opened blossoms gleam like stars.

Now let us look at the somewhat similar flower, the pink campion. We shall often find it growing in rather damper situations than the other plant—in moist and shady woods, upon the banks of ditches, and not seldom upon rocks by streams.

Its stalk and leaves are hairy, with the leaves

arranged in the same way as those of the white campion. The stem, however, is usually rather more slender.

The flower, as the name will tell us, is most often pink, although white blossoms may sometimes be found. Nor is this pink colour confined entirely to the blossom. The stalks not seldom have a reddish hue, especially where the pink campion grows alone, free from surrounding grass and other plants. There is a reddish tinge, too, in the *sepals* of the *calyx*—the case or sheath, green in so many plants—which surrounds the unopened petals. The flowers are scentless, and are fully open during the day. The stem, when crushed, gives out a strong, not very pleasant smell.

You doubtless know that plants have organs of two sexes. Those which are *male* bear pollen, and it is by this pollen that the female organs of the plant are fertilized and seed produced. In the centre of the starry cluster of five deeply-cleft petals of the pink campion may be sometimes seen five thread-like *styles*—a portion of the female organs of the plant. If these are

present, and are fully developed, there will be no *stamens*, or male part. For both the pink and the white campion are *diœcious* plants—that is to say, that blossoms of different sexes will be found on separate plants.



Heather and Heath.

3. HEATH AND HEATHER.

IN our opening chapter, as you will remember, we half hesitated for a moment as to which of the crowfoots we should call the buttercup; and now in the same way we feel inclined to hesitate again. For heath and heather are, at the first glance, a good deal similar; it is not until we have looked a second time that we distinguish them apart.

At least many people find this difficulty. Moreover, what is called heath in some parts of the country is known as heather in others, and *vice versâ*. Even botanists will sometimes differ as to which is which.

Heather and heath belong to the same family, or *order*, of plants. But while there are several species of heath in Britain, there is only one species of true heather, though that species has some two or three varieties. What Sowerby, the famous English botanist who lived a century

and a half ago, called heather is the plant shown in the picture with the smaller flowers. Its Latin scientific name is *Calluna vulgaris*. The plant with larger flowers is the *Erica cinerea*, or common heath. Another name for the heather is ling.

It has a woody, tough, and hairy stem, which varies from nine inches to two feet in height. That is, at least, the common height when heather grows upon the open hills or moors, where it is oftenest found. When flourishing upon a rich, deep bed of peat it sometimes grows much higher still.

The leaves which, as you see, are very small, lie closely pressed against the stem. They have a tiny spur at their base, are flat upon their upper surface, but shaped like a keel upon the under side.

Now let us look particularly closely at the blossoms, or we shall be liable to make mistakes. The inner portion is a bell-shaped *corolla*, divided at its open end into four segments. Its colour varies from deep purple to pale pink.

Outside this small corolla, and much larger, thus surrounding it, there are four sepals, also

purple pink. So that it is not the true corolla, but the sepals, which first meet our eye.

We might have fancied that the sepals were the four green leaf-like forms lying at the sepals' base ; but these are really *bracts*.

We know and love the heather chiefly for its beauty when it is in flower in late summer and the early autumn months ; but it is also a most useful plant. At least the dwellers in the lonely Scottish Highlands find it so. It can be used as food for sheep and cattle, for the thatching of small houses, and for besoms ; for fences, and for covering drains in fields.

Then, too, the honey-bee resorts to it. No sooner is the heather in full flower, than those bee-keepers who live near hills and moors on which it grows take out their hives and let the tiny workers feast upon the nectar of the plant for several weeks. This heather nectar gives the honey a dark colour, and a striking and peculiar flavour which some people do not like.

The other plant shown here is *Erica cinerea*, or purple heath. Here, too, is a four-lobed corolla ;

but it is much larger than that of the heather, and is egg-like in its shape. The blossoms grow in thicker clusters on the stem. The leaves, too, are quite different, growing in a *whorl*, or circle, on the stem. Another kind, the cross-leaved heath, has flowers which grow in clusters at the end of stems.



Cowslip

4. THE COWSLIP.

IT is with pleasure that in some spring meadow we shall turn from buttercups to cowslips; for in cowslips certainly we find no harmful qualities of any kind. The flowers store up quantities of nectar for the honey-bee, and yield the farmer's wife a wholesome English wine. The cowslip would be welcome though it were as common as the buttercup and daisy.

The plant is in several ways an interesting one to study. It is nearly related to the primrose, and when we come to speak of that flower we shall see that the two resemble each other in many ways, while yet differing in certain points.

The cowslip bears its blossoms clustered in a group, each cluster raised upon a leafless stem, or *scape*, growing from a very short main stem below the ground. The cowslip's scapes are from about four inches to a foot in height.

At the top of the scape the blossoms all grow from an *umbel*, or central point. Most of the blossoms are drooping: the outer blossoms of each cluster are always so. The number of blossoms on a scape may vary, being sometimes as many as fifteen.

The larger, most conspicuous portion of each blossom is composed of the calyx, the pale outer sheath of green, tube-like in shape. From this emerges the corolla, or inner covering, also in part shaped like a tube, but expanding beyond the edge of the calyx into five separate yellow lobes. The outer edge of each lobe is notched in the middle, and near its base is a deep orange-coloured spot. Each separate blossom grows upon its own short stem.

I want you to remember that the blossoms of the cowslip grow on *short* stalks from an umbel borne on the top of a long stem. When we come to examine the blossoms of the primrose we shall find a similar arrangement, yet marked by a great difference.

The leaves, with deeply wrinkled and indented surfaces, are shorter and rounder than are primrose leaves. Still, they are long and narrow, and

towards their base they become narrower still and extend along the leaf-stalk, called the *petiole*, in the form of wings.

We call the leaves *radical*, which means root-leaves. But we must be careful to remember that leaves do not grow directly from the root of a plant. As in the cowslip, they may seem to do so, but radical leaves really grow from a short stem below the surface of the soil. In the cowslip this stem is so extremely short as to be hardly visible above the root.

The cowslip is most usually in flower during April or the early part of May. It cannot well be called a common plant, but is found here and there in meadows and on grassy banks. Its leaves make wholesome salad, and its roots were formerly much used as simple medicine.

The flower has a host of other names besides the one by which we call it here. Some country people know it as the paigle, though I doubt if they could tell you why ; that name is corrupted from *paglieuola*, an Italian word which means "a spangle," and is certainly a good descriptive name.

Then, too, it has been called Herb Peter, from the likeness of its clustered blossoms to a bunch of keys: it was St. Peter who was thought to hold the keys of heaven in his hands. More names the cowslip has, but they are far too numerous to be given here.



Honeysuckle (two varieties).

5. THE HONEYSUCKLE.

FEW people fail to recognize the honeysuckle when they see it, with its clusters of most fragrant blossoms, high among the bushes of some hedge, or even clinging to a tree. For the honeysuckle is essentially a climbing plant, and may at times become a weed—a plant in the wrong place. The reason why this is so is quite clearly hinted to us in its other name of woodbine.

For it not only climbs, but *binds*, twisting its tough stem round all trees and shrubs on which it can lay hold. The stem looks slender, and you might imagine that it would not make a great impression on a branch of hazel or of holly in the hedge. But wait a year or so. The honeysuckle's stem twists round the bough and binds it tightly, never yielding by a hair's-breadth to the growing size of its support. And some day you may buy, or perhaps cut for yourself, a holly stick or hazel rod with a long spiral groove deeply imbedded in

its wood. That groove has been made by the slender but fast-clinging honeysuckle stem.

So to the forester the honeysuckle is an enemy to be cut down whenever seen ; its hold upon young trees will mean to them great loss of growth—sometimes perhaps even death in course of time. But in a common field-side hedge the plant will do but little harm, and we are free to welcome this, in every other way, delightful plant.

We find the blossoms growing in clusters—most usually from seven to ten together—from the ends of stems. Each flower is a corolla, a long narrow tube with a wide mouth of trumpet shape, from which extend two lips, one narrow and the other broad. The usual colour is a dull red outside and pale gold within ; sometimes the outer part is yellow, or so pale as to be almost white.

If we examine the plant's stem as it twines round some tree or bush within a hedge, we see that it is twisted from left to right. Some other climbing plants have stems which twine in the same way. Not all, however, for the scarlet runner and great bindweed twine from right to left.

The berries which succeed the flowers in autumn are bright crimson red. Many red berries of our fields and woods are poisonous ; those of the yew, for instance, we shall do well to leave alone : but the bright crimson berries of the honeysuckle are quite harmless, and they form a favourite food of birds.

The smooth and blue-green leaves which grow in pairs upon the stem are egg-shaped, but are pointed at the end. They too form food, though not for birds. A certain insect's grub feeds on them frequently, and its traces may sometimes be seen in lines and markings where the tissue of the leaf is eaten quite away.

We have found some fault with the honeysuckle for its treatment of supporting trees ; now let us speak of one of its great virtues : it is rich in nectar. This lies deeply-hidden at the very base of the tube-shaped corolla. It is not every insect that possesses a tongue long enough to probe so far. But even then the nectar is not wasted : certain insects, not to be baulked of feasting on so rich a store, bite through the blossom at its base, and in this way gain access to the spoil.

6. THE POPPY.

THIS splendid flower is well worthy of our notice for some other reasons in addition to the beauty of its colour ; but in that respect it is wellnigh supreme among the blossoms of our English fields. No other flower has the rich, pure scarlet of the dainty petals which the poppy bears.

Let us look closely at the petals of a poppy just as they are bursting open on some sunny June or July day. The yet unopened blossoms all hang downwards on the stalk, the folded petals shielded by a hairy calyx of two sepals. These sepals open, and will soon drop off ; the blossom lifts its head upon the stalk and stands upright, spreading its petals in a shallow cup-like form.

The petals, four in number, placed in pairs, have one pair so much larger than the other that it quite encloses it while lying folded in the bud. And all four petals are, when first released, so



Poppy.

wrinkled, crumpled, that it seems hardly possible they will grow smooth and glossy as the open flowers are. Yet in an hour or so the sap has flowed into their slender substance, and has left no crease or wrinkle to be seen.

When the petals have faded and fallen, there remains upon the stalk a green cup-shaped seed-case, which is covered with a lid. In it there lie large numbers of extremely tiny, almost dust-like, seeds. How will these seeds be freed and fall to earth?

Some seed-cases are in the form of pods, such as the pods of beans and peas. In many plants these pods split open when the seeds are ripe, in others they may rot away. In either case the seeds within are set at liberty.

Other seeds, such as the seeds of dandelions, are uncovered, bear a wing, and so can float away upon the breeze.

The seeds of poppies are distributed in quite another way. Immediately below the lid of the seed-case we shall find a row of little holes placed round the cup. So, as the stalk sways gently to

and fro in the wind, the ripened seeds are shaken through these holes and fall.

The poppy is an annual plant, its root-stock dying each year. But the great number of the seeds which every flower-head contains ensures a plentiful supply of plants next spring. The plant is chiefly found on hedge-banks and waste places, and especially in fields of corn.

There, to the owner of the field, it is—however beautiful it may appear to passers-by—a far from welcome sight. Some annual weeds are easily got rid of, but not so the poppy from a field of corn. For when the seed has germinated, and the plant appears above the ground in spring, the corn has grown too high for men to enter it and root the poppy out. And long before the corn is cut the poppy will have blossomed, shed its seed to earth, and thus secured a further crop for the ensuing year. And thus this lovely flower may be confidently looked for in the same field year by year.

The stem is hairy ; so, too, is the calyx which surrounds the blossom. The leaves are large and

feather-shaped and deeply toothed ; those growing directly from below the ground have leaf-stalks, while those growing upon the upper portion of the stem are sessile—without stalks.

7. THE BIRD'S-FOOT TREFOIL.

IN speaking of the bird's-foot trefoil let us examine first the root, which is by no means the least interesting portion of the little plant. This root goes deep into the ground.

If we examine it we shall find bead-like knobs upon it here and there. These knobs contain bacteria—small organisms which have taken up their quarters there and live upon the tissues of the root. But these bacteria well repay the hospitality the plant affords; for by their means the bird's-foot trefoil obtains nitrogen—one of the gases which compose the air we breathe. A few plants, one of them being bird's-foot trefoil, thus obtain their nitrogen in a direct and simple way; others must draw it in small quantities from the surrounding soil.

Now, coming from below the ground, we notice next the stem. It is most generally about a foot



Bird's-foot Trefoil.

in length. I say in "length," not "height," for bird's-foot trefoil rarely stands erect unless held up by other plants. Its natural habit is to trail upon the ground, and it is sometimes called ground honeysuckle from this cause. We shall see presently why it is called bird's-foot trefoil.

The stem bears flowers and leaves alike ; the leaves are termed trifoliate, but we might hesitate to name them so when looking at the plant. For it might seem that each leaf has *five* leaflets rather than three. Three of these leaflets are borne in a cluster at the end of the leaf-stalk ; another pair is at the stalk's base, just where it branches from the larger stem.

Now we come to the flowers, which are borne upon an umbel at the end of a long stem ; four to ten blossoms on a single umbel is the usual number to be found. When open they are a rich golden yellow, but the unexpanded bud is red.

Each blossom has five petals, but the petals are of different sizes, and are curiously arranged. First, we shall notice a large upright petal, called the *standard* ; then two petals at the side, called

wings; lastly, two other petals form the *keel*, being linked together in a curious way.

A flower like this is said to be of *papilionaceous* type, because of its bearing some resemblance to a butterfly's wings.

And, finally, we come to that part of the plant which gives the bird's-foot trefoil its name—the seed-pod which succeeds the golden blossom. It is a thin dark case containing several seeds.

As there were several blossoms growing from the single umbel there will naturally be several pods. These, when the flowers have fallen and the seeds are ripening, stick out horizontally, all pointing different ways. In this position they have certainly some likeness to the claws of a bird's foot, and hence the name. And this resemblance is still greater when, as sometimes happens, the remains of the *style*, one of the female organs of the flower, clings to the end of a pod; it looks quite like the nail which should complete the claw. The plant has other local country names, too many to be mentioned here.

The bird's-foot trefoil flowers from about the

month of May until October, but will be seen best in June, or perhaps July. It is not dainty as to where it grows ; among long grass or on the top of some old wall, on a bare down or by a stream—the plant may easily be found in such a situation, and in many more.

8. THE SPEAR THISTLE.

THE artist shows us here a very handsome, but at the same time a most forbidding plant—the spear or spear plume thistle, for both names are often used. Admire it as we may, we are completely at a loss what part of it to touch.

Look at the stout, strong stem, which grows erect, often some three or four feet high. *That* is well furnished on all sides with sharp-pointed spines. We are no better off in turning our attention to the leaves.

These, as in many plants, are larger at the plant's base than those higher up the stem. The spear plume thistle's lower leaves are often quite a foot in length, and form a dense rosette upon the ground. All the leaves are deeply lobed or indented, and each lobe is terminated by a spine.

There is something peculiar about a thistle leaf which we have not observed in any other plant yet noticed in this book. The leaves are *decurrent*.



Spear Thistle.

Instead of leaving the stem sharply and clearly at a certain point, the leaf's base stretches for some little distance down the stem. Decurrent is a word derived from the Latin verb *curro*, "I run." To leaves like those of the spear thistle it is well applied ; the lower portion of the leaf looks much as if it had been melted and was running down the stem.

Even the dark-green upper surface of the leaves is almost spiny, being covered with sharp-pointed hairs. The lower sides are softer, paler in their colour, and are clothed with cottony down.

Mounting still higher up the stem we find a cone-shaped form. This too repels us, for, like leaves and stem, it is protected by a coat of spines. Above it we shall find the flower, usually purplish crimson in its colour, though sometimes much paler, and occasionally almost white.

The spear plume thistle is a flower of the *order* known as *composites*. The blossom has no true petals, being composed of many little tube-shaped *florets*, which all stand erect, or nearly so. They are arranged in a large plume which spreads far

beyond the top of the green cone on which it stands. It forms a very handsome flower.

After the blossom comes the *pappus*—winged or feathered seeds. I add “feathered,” for the hairs attached to them are feather-like in form.

I wonder if you have ever been told that the goldfinch uses thistledown as one of the materials for its dainty nest? If you believed it, then I am afraid you did not think much whether such a tale was possible or no. For when are thistle flowers over, and succeeded by the seeds? In summer and in early autumn, is it not? And birds are usually most busy with their work of nest-building in spring!

The fact is this: goldfinches love the thistle seeds as food, and may be thus seen hovering round the plants in summer-time. The down with which their nests are partly lined is taken from the leaves of certain plants, but is not thistle-down.

The spear plume thistle may be found in hedges and in pastures, and it flowers through the summer months. Its root-stock is perennial.



Dead Nettle ; Stinging Nettle.

9. THE STINGING NETTLE AND THE DEAD NETTLE.

THE stinging nettle is a plant far oftener seen than touched. It is quite common everywhere throughout the land, yet bold indeed would be the flower-gatherer who ventured to include it in his nosegay of wild blossoms. And though young nettle-tops are said to make a wholesome and agreeable vegetable dish, they are not often gathered for that purpose nowadays.

The stinging nettle is a self-protected plant ; both stem and leaves are thickly covered with a growth of prickly, poisonous hairs. These hairs, except for the small portion at the very point of each, are really tubes ; at their base lies a little sack-like bulb containing poisonous, irritating juice.

What happens when we touch a nettle leaf or stem is this : the sharp point of a tube, or probably the points of several tubes, pierce

through the skin and break off in our hand, a drop of poison rises from the sack at the tube's base, and—we are stung !

And yet, if we admire it from a respectful distance, the stinging nettle is a handsome plant. The straight stem grows some three or four feet high, is brittle, and, moreover, is not round as are the stems of many plants : it is four-sided—almost square. The dark-green leaves which grow opposite each other are somewhat heart-shaped at the base, but pointed at the farther end. Nor are the blossoms without a certain quiet beauty of their own. They are very small, but grow in large and drooping clusters upon stems which leave the main stem from the same point as the leaves.

The stinging nettle's poisonous qualities would seem to disappear when the plant dies ; for it is said that cows, though refusing—and no wonder !—to eat living nettles, swallow them willingly when dried among the hay.

The illustration shows us the great stinging nettle, which is that most commonly found in

England. There is also a small stinging nettle and a Roman stinging nettle. There is a curious story told of how this Roman nettle first came to our land.

When Rome first conquered Britain, and placed garrisons of soldiers here, these soldiers soon discovered that our winters were much colder than their own ; and so they flogged each other with the stems and leaves of stinging nettles as a means of warming their half-frozen blood. But finding that the English nettle did not act with a sufficient power, they sent back to Italy for Roman plants ; for Roman nettles have a far more powerful and painful sting.

That last sentence of my story is undoubtedly quite true ; whether the rest is so or not I must leave you to judge ! But we gather from old books on herbs and medicine that in former days nettles were used in some such fashion as a means to stimulate the blood.

The dead nettle shown here is really not a nettle at all, but is so called from the resemblance of the leaves. The blossoms grow in clusters,

each being formed of a corolla, bulging at its base. Both red and white dead nettles may be found in flower almost throughout the year. Their true name is archangel.

A third archangel, having yellow flowers, is less common, and it only flowers usually from April until June.



Harebell.

10. THE HAIRBELL.

IT is undoubtedly this exquisite little flower that is spoken of in the well-known song, *The Bluebells of Scotland*; yet we shall fall into confusion if we call it by that name. For, blue though the hairbell's flower is, the name bluebell is—in England at any rate—more commonly given to the wild hyacinth, which we shall notice presently.

Harebell the name is sometimes spelt, but this is wrong; the flower takes its name from the extremely slender hair-like stem. Its scientific Latin name is *Campanula rotundifolia*, meaning the “round-leaved little bell.” Now, the first part of this name is understood at a glance; no flower is more like a little bell than is the hairbell's tender drooping blossom of pale blue.

But why should it be called “round-leaved”? For nothing, surely, is less round than are the leaves which grow upon its slender stem. So

narrow are they that they are called *linear*, or line leaves.

But do not be too hasty ; let us look a little lower down. There, growing directly from below the ground, we shall find other and much broader leaves, heart-shaped or sometimes almost round. They are the earliest leaves of the plant to appear, and often wither and die down in spring. So that we see *Campanula rotundifolia* is quite well entitled to its Latin name.

The slender hairbell is essentially a flower of the fresh pure air of mountains and of open moors. Often it grows upon stone walls. But take it from its native place to low ground, or to the comparatively tainted air of some town garden, and forthwith it dies.

The whole plant is slender, from the perennial root-stock underground to the small fragile blossoms quivering in the breeze. These grow, usually singly, on the extreme end of the main stem or upon branching stalks.

Once, long ago, the hairbell flowers had five petals, but those petals have now grown together

at their base, and so we speak of the hairbell blossom as a corolla, divided at its outer margin into five segments, or lobes.

Sometimes white hairbells may be found, and this leads us to notice a most interesting fact. If a white hairbell grows in a field where there are numerous red flowers, more of its colour will most probably appear from year to year. But if surrounding flowers are chiefly yellow, then white hairbells are not likely to increase. Now, why is this?

The reason is the instinct and resulting conduct of the bees. They are attracted in great measure to a flower by the brightness of its hue. Now, in a field of red flowers a white hairbell is more conspicuous than a blue one—it forms a greater contrast and is easily seen. Thus it is certain to receive the visits of the bees. They carry its pollen to other white hairbells, and in this way fertilize the seed from which white-blossomed plants will grow.

But among yellow-flowered plants, blue is a greater contrast and more easily observed than

white. So the white hairbell is quite likely to be overlooked by bees, and thus the flowers of that colour have less chance of being fertilized.

The flower holds much nectar ; there is said to be one bee which sucks its nectar only, visiting no other plants. Small flies and other insects often seek the shelter of its drooping bells by night.



Dog-Rose.

11. THE DOG-ROSE.

WE must remember that the dog-rose pictured for us here is not the only wild rose we possess ; for altogether there are five. There is the field-rose, usually more creeping than the dog-rose, with white flowers altogether destitute of scent. There is the Burnet rose ; also the sweet-brier, found chiefly in the south of England, with its fragrant leaves. Lastly there is the downy rose.

But we may well consider that the sweet dog-rose is queen of all the five. Alas ! the lovely flower's reign is all too short. It opens late in June, and will be seldom found in blossom after the middle of July.

Each individual flower's life, too, is extremely brief ; only for two short days it sheds its fragrance on the passers-by. During the single night that intervenes the petals fold, closing upon the organs of the flower to keep them safe from harm.

It is quite true that you may find a blossom open during the night ; but that is one whose life is over. In it the fertilizing pollen has already done its work, and there is thus no need for further care.

The dog-rose is a quick-growing plant. There is an obvious reason for this, easily understood if we consider its habits. We do not find the dog-rose growing alone, but rather in some hedge where there is other stronger growth to which it clings. Now, slow-growing plants most often form a hard, strong wood : the dog-rose, trusting much to the support of others, does not need such solid wood itself, but spends its strength in rapid growth. In hedges it is often seen from eight to twelve feet high.

Another aid to this fast growth is given by the thorns or prickles with which the stem is thickly set. These thorns are hooked—not straight—thus giving a firm hold, and helping greatly in the climbing habits of the rose.

It is most probably these numerous hooked thorns from which the dog-rose takes its name : it should be really “ dag ” or dagger rose.

The leaves are composed of five leaflets, each of which is toothed, or *serrate* ; sometimes they are *bi-serrate*, or doubly toothed, with smaller teeth between the larger ones.

The blossoms have five pale pink petals, full of faint but most delicious fragrance, as all gatherers of the dog-rose know. Guarding these fragrant petals are five sepals, sharply pointed, often with their edges toothed. Within the circle of the petals are stamens, bearing pollen.

Fragrant as is the rose, yet it contains no nectar in its flower. Yet it has insect visitors : flies and small beetles come to it for pollen, and ensure the fertilizing of the seed.

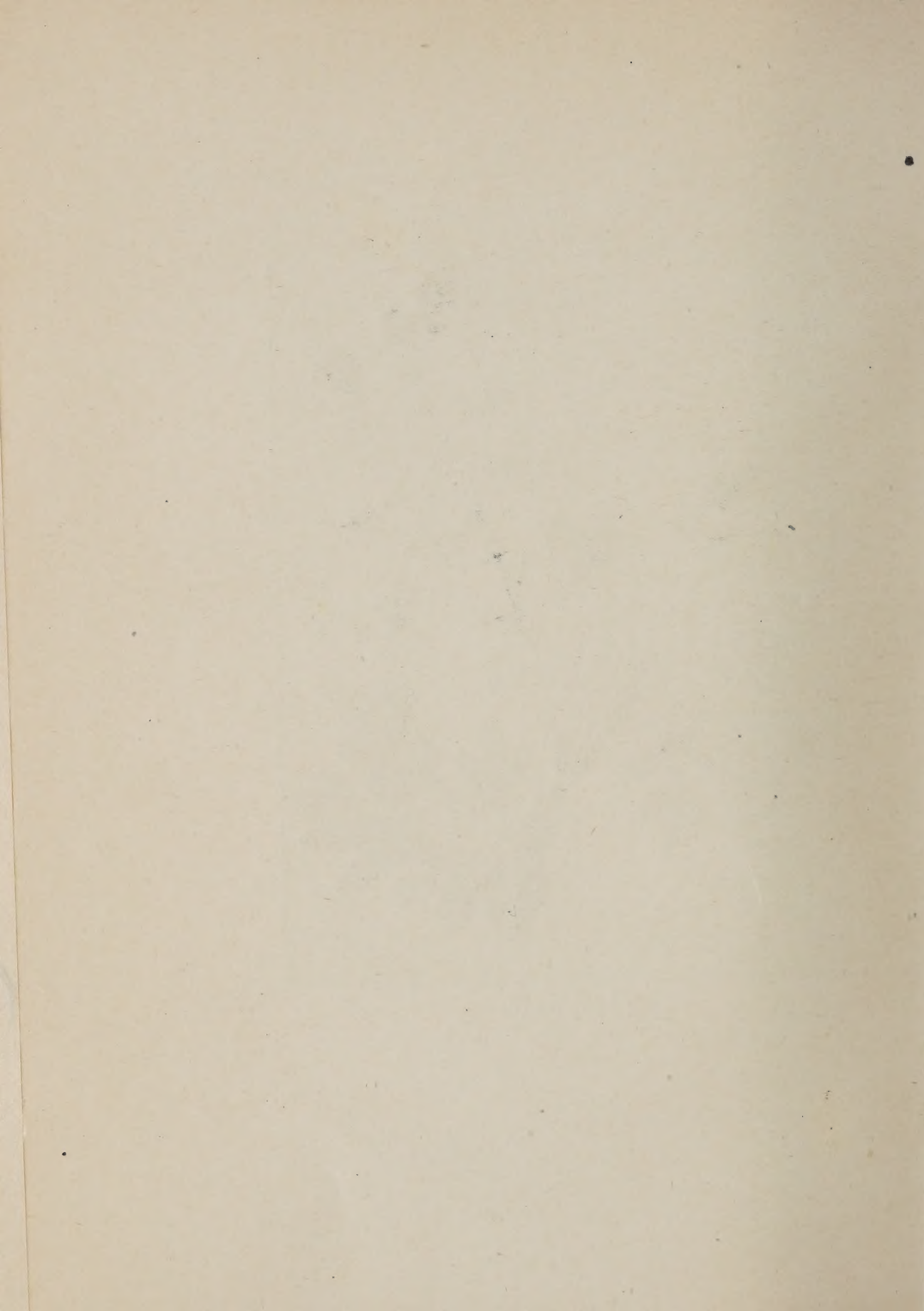
That seed is hidden in the scarlet "hip," which in the autumn takes the flower's place. We are inclined to call it a berry or fruit ; in reality it is neither, but is the extreme end of the flower-stem, which has become a case for seeds.

Its bright-red colour makes it quickly seen by birds ; they either open it or eat it whole, and thus the seeds are scattered and fresh roses sown.

The wild rose is the parent of the many cultivated roses we possess. But *they* produce no seed ; for in process of cultivation and improvement their pollen-bearing stamens have become transformed into additional petals.



Hawthorn.



12. THE HAWTHORN.

MOST of the plants which we have yet described are small, comparatively speaking, and many of them are short-lived: the poppy, for example, lives but for a single year. But now we come to the hawthorn, a plant so large as to become, if it is left in peace to do so, a real tree.

True that it is not frequently allowed to grow so large; we know it best as forming the chief portion of some hedge. That fact, indeed, has given the plant its name; it is the *haeg*-thorn or hedge-thorn. But if allowed to grow unpruned in open spaces, many hawthorns will grow twenty feet and more in height, with thick, rough trunks and branches densely interlaced.

But even when it forms a portion of a hedge the hawthorn will, if not too closely trimmed, put forth its welcome flowers. "May" is, as everybody knows, its second name. That name, we often think, should now be changed to "June."

May-Day is now some twelve days earlier than before our English "style" of keeping time was changed, and nowadays that month is often nearly at an end before the fragrant hawthorn blossoms are unfolded to delight us with their scent.

In one respect the hawthorn may recall the gorse; the large, sharp spikes which greet our hands in search of flowers are really stunted or abortive branches, ending in a point. And, like the gorse again, there are two smaller spikes, growing close beside the leaf-stems of the leaves. Unlike those of the dog-rose, which are crooked, hawthorn spikes are long and straight. Curved spikes would be of little use to hawthorn, for it forms hard, solid wood, and thus needs no assistance in its growth.

The leaves, which are rather small, smooth, and shining, vary somewhat in their shape; but they are deeply notched, forming five lobes, or sometimes three. They grow raised from the twigs on *petioles*, or leaf-stalks.

The blossoms are composed of petals, five in number, as we have already seen to be the case

with many other flowers. These petals, rounded in their form, are either white or pink—white being the colour oftenest seen. There is a cultivated variety which bears deep crimson flowers.

Because the blossoms are most often white we might think that the reason for the plant being known in many places as whitethorn. That is not so ; its relative, the blackthorn, has a snow-white flower. But the twigs and branches of the blackthorn are much darker in their shade, and hence the different names.

The flowers are followed by the “haws” which stand erect in rather scanty clusters on their stems. Unlike the “hips” of the dog-rose these “haws” are really fruit. Within them lies a *carpel*—one or two, or sometimes three—and in each carpel is a seed.

A very curious fact about the hawthorn is, that there are some few trees in England which are known to blossom twice a year : once at the usual season, and again at Christmas-time. Of these, by far the best known grows at Glastonbury, where—so legend says—it sprouted from the staff of

Joseph of Arimathea when he was in England and preached there. This visit of the saint to England is a legend, nothing more ; but it is certain that the Glastonbury hawthorn often flowers at Christmas-time.



Furze (Gorse).

13. THE FURZE.

WE know the furze, or gorse, by reason of the gorgeous blaze of its rich golden blossoms in the spring, although indeed it may be found in flower during wellnigh every season of the year. We know it also for the way in which those golden flowers are guarded from the clutches of rude hands. The primrose and the violet are only safe in some secluded neighbourhood, but he is a bold flower-picker who goes gathering gorse.

Let us look first at those same spines which guard the golden blooms so well. We see that they are of two kinds. The main stem of the furze is rough and furrowed; so too are the larger, longer spines, being deeply ridged, excepting near the tip, where they are smooth. That tip is brown, while the main portion of the spine is rich dark-green. These larger

spines are really stunted, or *aborted*, branches, ending in a spike.

Growing out from them in all directions are the smaller spines, smooth, or comparatively so.

We look almost entirely in vain for leaves. The only leaves worth mentioning appear almost immediately the seed of a future gorse-bush has germinated. Such tiny leaves as may be later found upon the stem are almost wholly leaf-stalk, and are scarcely to be seen among the thick-set spines.

The golden blossoms have five petals, curiously arranged. One, called the *standard*, is the largest; while two smaller ones are called the *wings*; another pair of petals form the *keel*.

Before these petals open they are wrapped in the two-sided calyx, which is yellowish-green in colour, covered with small soft dark hairs.

After the flowers come the seed-pods, holding dark-brown seeds. On a warm sunny day of early summer these seed-cases snap and crackle loudly, as they open, with a sound like small artillery. They burst asunder suddenly, as with

a spring, and by this jerk the seeds are scattered many yards away.

Growing as it does on hills, wide open commons, and waste ground, the furze is often thought to be a hardy plant. It is not really so, and in hard winters it not seldom dies. It cannot stand the cold of Sweden. When the Swedish botanist Linnæus saw it first in England he went down upon his knees in thankfulness that such a lovely plant should grow. At least, that is the story told of him; but it is told of some one else as well: and perhaps it is not absolutely true of either man. We should be glad to be quite certain that it were.

The furze would hardly seem a very tempting plant to eat, yet the young shoots form wholesome food for animals, especially if first crushed a little. And for our own part we remember seeing a pony on a common munching them contentedly, doing all the necessary crushing with his teeth. He tore off mouthful after mouthful from the bushes, seemingly with a keen relish for his prickly meal. Furze makes a good hedge,

difficult to break, and forms a welcome shelter to the rabbit and to birds that live much on the ground.

The name furze comes from *fyr*s, an Anglo-Saxon word ; and gorse from *gores*—waste, uncultivated ground on which the furze is often seen.

14. THE FOXGLOVE.

THIS is a flower which, though it is found from the extreme south and south-west of England northwards as far as the Orkney Islands, is yet absent from one or two counties — Cambridge among the number. That is a loss to Cambridge, for the foxglove is one of our most beautiful and striking flowers. It is considered a biennial plant, though frequently the root-stalk lasts for several years.

The rounded stems are five or six feet tall, and sometimes even more ; in the Forest of Dean, in some parts of which the foxglove grows luxuriantly, they have been found eight feet in height. Usually the stem is entirely without branches ; if these are present, as may sometimes be the case, they point straight upwards like the stem itself.

The radical leaves are often very large — a

foot in length if we include the winged leaf-stalks, or *petioles*. Those growing upon the stem are smaller, and their stalks grow shorter towards the stem's top till the upper leaves are *sessile*—without stalks. The leaves are grayish on their under sides ; indeed, both leaves and stem are of a grayish shade of green.

- But it will be the splendid purple flowers that attract us most, growing thickly clustered on the top and upper portion of the stem, and always on one side of it. They are from one inch to two inches—sometimes more—in length. Their colour is a purplish crimson near the base, growing slightly paler towards the open end. Inside that open end the colour is so pale as to be almost white, and it is spotted with rich purple dots. The lowest flowers on the stem are those which open first.

I shall perhaps hardly need to mention that the foxglove has no petals ; its fine flowers are corollas, hanging downwards and somewhat bell-like in their shape.

It is a flower greatly visited by bees, which

come to it to sip its nectar. Smaller insects too resort to it, and many find a shelter in its open blossoms from the chill and dews of night.

You will perhaps ask me whence the foxglove gets its name. There are several answers to that question. The blossom is not unlike the thumb or finger of a glove; foxes and foxgloves may be found in woods, and we might think that country folk have named the plant the "fox's glove."

But it is perhaps more probable that "fox" is merely a corruption of "folk," the name by which the fairies were once known. Then it will be the "fairy's glove" the foxglove carries on its stem.

And there are other explanations of the name. The plant was first noticed and described in Germany by a botanist named Fuchs, who lived in the sixteenth century, and after whom the fuschia has been named. So it may be that Fuchs'-glove is the real name.

Then, too, it is possible that "glove" is a corruption of *gleown*, or music. You wonder

what there is in common between music and the foxglove. Well, a favourite instrument of music in former days was a set of bells which hung upon a frame, a little like the way in which the flowers of the foxglove hang upon their stem. So that we find this question of the name is not as simple as it seemed.

Though usually biennial there is little fear of foxgloves dying out where they have once appeared ; a single plant may shed no fewer than two million seeds. It flowers from late May till early August, and is found in woods and lanes ; frequently also upon rocky slopes.



Speedwell.

15. THE GERMANDER SPEEDWELL.

MORE than a dozen speedwells grow in Britain, but the one our artist shows us is the germander speedwell, fairest perhaps of all.

It is a perennial plant, and will be found in flower during May and June, haunting hedge-banks and woods. The plant is often only a few inches high, and generally somewhat trailing in its growth.

The leaves grow on the stem in pairs, sessile, without leaf-stalks. They are somewhat oval, coarsely toothed, and have a hairy and wrinkled surface.

The flower-bearing branches grow from the main stems, one or more rising from between each pair of leaves. On them, in clusters, grow the flowers, in colour a most lovely blue. No wonder that in Devonshire the country children call them "angels' eyes."

At first we think the blossom has four petals, but examination shows us that this is not strictly

so. It is really a *monopetalous*, or one-petalled corolla, but divided at its margin into four lobes. One of these lobes—the lowest, for the open flower is vertical—is smaller than the other three. There is a single pure white spot within the centre of the blue.

Some other colours, too, the blossom shows. There are two slender crimson-headed stamens rising from the centre of this spot of white, and also a tiny green seed-vessel. Outside the lobes, which we at first thought petals, are four sepals, strap-shaped, with sharp points.

The strongest impulse of most people when they see a wild flower is to pick it: some few only will prefer to pause, admire it, and then pass on their way without it, leaving the blossom to live out its natural life. Those few are wise—at any rate where the germander speedwell is concerned. Pick a well-flowered spray and carry it a mile or two; before your goal is reached it is quite certain half the blossoms will have dropped, nor will the few remaining long retain their place upon the stem. And from this fleeting nature of the blossoms when

gathered, the Norwegian peasants have named it, with a touch of bitterness, "man's faith."

The flower is one of those which, like the daisy and the dog-rose, close at night ; it closes, too, in rain, and even when it feels damp weather near.

The speedwell flower bears nectar, and for this, as also for the pollen, insects visit it. But creeping insects are not wanted ; they might injure or destroy the flower.

Against such visitors the germander speedwell has a natural protection well devised. Between each pair of leaves there is a sort of double hedge of hairs, though the remainder of the stem is smooth. As the plant's flower-stems rise from between the leaves, we are not at a loss to understand how easily these hairy hedges act as barriers against insects mounting from the ground.

The lobed corolla, and also the stamens when their fertilizing pollen has been shed, are thrown off in a curious way. The sepals of the calyx, hitherto spread out behind the lobes of blue, now close up and become erect, squeezing the corolla so tightly that it is pressed off.

16. THE DAISY AND OX-EYE DAISY.

THE daisy, most familiar of wild flowers, is another plant of which each blossom grows alone upon a leafless scape. It is a member of the extensive family of plants which are called *composite*; instead of the flower being formed of a few petals, it is a collection of many tiny florets.

Small as the daisy's flower is, the number of these florets is considerable. Those in the centre, more than two hundred in number, are tubular in shape, bright yellow, and stand upright, being closely packed. The outer florets, of which there are about fifty, are white; sometimes entirely so, but often having their tips tinged with crimson or with pink. They are flat and strap-shaped, and their ends are notched. They lie spread in a double frill round the centre of the flower.

The leaves are radical; they grow in a rosette, or circle, from the short main-stem below the



Ox-eye Daisy ; Common Daisy.

ground. They are hairy, and oval in shape ; towards their base they narrow, and the short leaf-stalks are “winged,” a narrow portion of the leaf extending down their sides.

The daisy is a perennial plant ; its root-stock does not die away each year. The plant forms seed, as others do. But there is, too, a second way in which its numbers are increased—namely, by young plants growing from the old root.

If you dig up a daisy from a patch of grass upon a lawn or in a field—and but few lawns, and certainly no fields, are to be found without this commonest of flowers—you are almost certain to discover that the plant you have raised is attached by a tough cord-like shoot to a neighbouring plant ; perhaps also to a third, and even to a fourth. These cord-like shoots are given off from the main root-stock.

That is the second way in which the daisy spreads ; it does so most persistently, even when not allowed to form its seed. You may mow a lawn constantly, till not a daisy flower is to be seen ; but unless the plants are actually rooted

up the lawn will soon be covered : the grass in time will be completely smothered and will die away, and you will have a daisy lawn. So daisies, though so dear to children, are not welcome to the careful gardener.

The outer fringe of florets closes up each night at dusk, covering the central disk, and does not open till the dawn of day. Hence comes, most probably, the daisy's name—the eye of day.

At first sight we might fancy that the ox-eye daisy was the common daisy grown to a large size, but close examination undeceives us. Both plants belong to the same *natural order*—they are *composites*. But the little field daisy is the only specimen of its particular species found in England. A near relative of the large ox-eye daisy is the marigold.

The blossom of the ox-eye daisy is composed of florets—many and golden in the centre, white upon the outer fringe. These white florets are comparatively few in number, seldom more than thirty, sometimes even less.

So far, the plant is like the common daisy, but now let us look for differences ; we shall soon find

them in the leaves. Of these some are radical and have a stalk ; they are oblong and coarsely notched at the edge. Others grow from the flower-stem and are sessile. They grow alternately, first one on one side of the stem, and then another on the other side.

The ox-eye daisy is perennial, and its stems are usually from one to two feet high. These are slightly branched, and carry several flowers. The flowering season is from May until July.

17. THE HERB-ROBERT.

THIS pretty little flower is a wild geranium, and it is an annual, or at most biennial plant. Leaves grow both from below the ground and from the stems, but the radical leaves soon wither and die quite away.

The leaves are very handsome and are made up of three leaflets, or occasionally five. Each leaflet, again, is so deeply notched and lobed that the whole leaf presents a most graceful and feathery appearance.

Both stems and leaflets are green when they first appear. But as the weeks pass they gradually turn bright crimson red. Thus the whole plant is very noticeable among its fellows of the bank and hedge. Although so handsome, there is one unpleasant point about herb-robert, for it has a strong and very disagreeable scent. This is most noticeable when the leaves or stem are bruised.

The blossoms of herb-robert grow in pairs on stalks. They are composed of five pink petals,



Wild Geranium (Herb-Robert).

streaked with purple or with white. Outside the petals are five sepals, two inner and three outer ones, the outer three being hairy.

There is an extremely interesting point to notice in connection with the seed. We saw that the seeds of the spear thistle are supplied with feathery "wings," by means of which they are borne far away upon the wind to take root on fresh ground. The seeds of traveller's joy, and also of the dandelion, as we shall soon see, have wings in the same way. Some plants have seed which is contained in fruit or berries of which birds are fond; the flesh is eaten, and the seeds are dropped. Still other plants, the furze among the number, burst their pods open with a sudden jerk, and so disperse their seed.

But the herb-robert has a method slightly different still. By various movements in some of the organs of the plant—too complicated to be well explained in detail here—something resembling a spring is brought into action, and by this means the seed is shot off with a force which carries it some distance from the parent plant.

There is much doubt as to the reason of the herb-robert's name. It flowers through the summer, and is even sometimes found in bloom in winter-time. But it first usually appears in blossom about the final days of April or in early May; and for this reason it is thought to be named after a Saint Robert, whose "day" is the twenty-ninth of April.

But there is yet another Robert who perhaps gave the plant its name. This is a Duke Robert of Normandy, who lived several centuries ago, and for whom a book on plants was written by a learned writer of that day. This writer may have first observed the plant about that time, and have bestowed upon it the duke's name.

It is, perhaps, still more probable that its name means nothing but "herb-rob," or the red-plant; for, as we see in autumn, the whole plant, both stem and leaves, is noticeably red. It is a member of the *genus* of plants known as crane's-bills, so named from the shape of their fruit. Geranium, too, comes from the Greek word *geranos*, which means a crane.



Lesser Convolvulus.

18. THE LESSER CONVULVULUS.

THIS little plant, although it bears a very lovely flower, is to the farmer one of the most irritating weeds. The word convolvulus is taken from a Latin word for "twining," and another name, the smaller bindweed, also well describes the plant. It twines round other growths and binds them fast.

So does the honeysuckle, as we saw; and so, too, does the larger bindweed, a near relation of the plant of which we have to speak. But the habit of the lesser convolvulus is somewhat different. Instead of climbing in a hedge, it will more usually be found upon the ground; and this is why it is the farmer's foe.

It is most often found in cornfields, not infrequently spreading over the whole field, forming a dense close network on the soil. Rising a little way, its stems cling round the cornstalks, nearly choking growth. In a potato field it spreads in

the same way, and renders the potatoes difficult to dig when ripe.

Why does the agriculturist not clear it from his fields? That is not easy to accomplish; for the bindweed's roots are spreading, penetrating everywhere. They are extremely brittle too, and snap when pulled; while every little piece of root remaining in the soil will make a fresh plant in the following spring.

The flower gatherer has a grudge against the small convolvulus; in vain it is included in the nosegay that he picks. Almost immediately its blossoms close, and utterly refuse to open even in the water of a vase. Even when growing, it only opens in the sunshine, keeping closed upon dull, sunless days.

Perhaps we have grumbled too much; flowers and leaves both well deserve our praise. The leaves grow on the trailing stems alternately; one on one side, and then another higher up on the other side. They are dark-green and shining, and at times two inches long. The edges of the sides are smooth, being neither dented nor serrated, but the base is deeply lobed—one lobe on either

side of the leaf-stalk. The tip is pointed, and the shape is rather like an arrow-head.

From the leaf-axils—that is, where the leaf-stalk joins the stem—there rise the flower-stalks. Most often these divide to form two smaller stems, on each of which there is a flower. But we shall rarely find two open flowers on a stem at once; for one stem is much shorter, and its flower is but a bud while that upon the larger stem is in full bloom.

The pretty pink corollas have white stripes and are *campanulate*—bell-shaped. Yet when we compare them with the blossoms of the hairbell, for example, we see that they have more resemblance to a trumpet than to a bell. The mouth is wider and more spreading, and the hollow part less deep. The trumpet's edge is very delicately waved.

We shall find the lesser bindweed coming into blossom towards the end of May or early June, and it continues flowering through the summer months. Both it and its larger relative, the great convolvulus, are dangerous plants to grow in gardens, delightful though their blossoms are. They are far harder to get rid of than to introduce.

19. THE WOOD ANEMONE.

THE wood anemone is a flower over which the youthful botanist who is but just at the commencement of his knowledge will be very liable to fall into a great mistake. For, looking at the mass of star-like blossoms in some woodland, he will most likely speak of the white *petals* of the flower. But there are no petals to the wood anemone, for its starry flowers are composed of *sepals*. These, green in so many other plants, are white in wood anemones, and form the most delightful flower. They form the sheath, or calyx, which in most plants is wrapped round the yet unopened petals of the flower; but in the wood anemone there are no petals to be wrapped.

The number of the sepals in the wood anemone is usually six, though sometimes varying from five to nine. They are very smooth, or, to use a botanical term, *glabrous*.



Wood Anemone.

The blossoms have no nectar, and if there is some fragrance, it is very faint. Yet bees resort to them, bite through the tenderest portion, and suck up the juice within.

Descending now below ground we shall find the root-stock creeping horizontally a little way beneath the surface of the soil. Such a creeping root-stock is botanically called a *rhizome*; that of the wood anemone is about the thickness of a quill.

From this rhizome there rise both leaves and flower-stems. These radical leaves are few, and they grow from a point of the rhizome at a little distance from the flower-stems.

Each flower-stem bears a circle, called an *involucre*, of three leaves. Each of these leaves is in its turn divided into three somewhat wedge-shaped leaflets. But of these the *lateral*, or side, leaflets are so deeply cleft as to give the leaf the appearance of having five leaflets rather than the real number—three.

When the anemone is in flower we shall find this involucre placed about two-thirds the distance

up the stem ; but earlier in their life the leaves are at the top, where they enclose the blossom's yet unopened bud. As soon as the white sepals open, the stem swiftly lengthens, and thus the flower is carried up above the leaves. The stem is from about eight inches to one foot in height. It is quite likely that the involucre is of use in keeping harmful creeping insects from ascending and from meddling with the flower.

When looked at from a little distance these pale flowers seem to be pure white ; examination of their under sides will show that they are tinged with a pale purple pink. Indeed, occasionally wholly purple blossoms may be found.

These lovely star-like blossoms open in the month of March or early April, when the bitter winds of spring have not yet ceased to blow. The little flower on its slender stem holds up its head against the rudest blast ; but should rain come, or even threaten, the white blossoms droop and close, thus serving as a woodland weather-glass. They close, too, as night comes on.

As its name tells us, the anemone is oftenest found in woods. An old writer on herbs and their use as cures for disease strongly advises the chewing of its roots; but these contain bitter and acrid juices, similar to those of the buttercups. Indeed, both plants belong to the same *natural order*.

20. THE SWEET VIOLET.

EACH individual flower-lover has some special favourite of his own which is held dearest in his heart; the rose, the primrose, and yet other flowers, often hold first place. But even when the violet is not the one most prized, it rarely fails to rank as second-best. Its deep, rich hue, its fragrant scent, its early date of flowering, combine to make it one of the best loved of our wild English blossoms.

To most of us it is far dearer than its larger and unfragrant relative, the dog violet, which holds its head up boldly from the hedge-bank, while the fragrant violet is hidden by its leaves. These leaves are large and heart-shaped, and there is an interesting fact concerning them to note: while still unopened they are rolled up in two sections, each side rolled upon its upper face. Another welcome flower of the spring, the prim-



Sweet Violet.

rose, also has its leaves rolled up, but on their under side. The leaves of the sweet violet all spring from the short stem below the ground.

From this stem also spring the leafless scapes which bear a single blossom. The blossom has five petals, one larger than the rest and single, with two smaller pairs.

You may remember that in furze, the bird's-foot trefoil, and some other flowers we have seen, there were five petals—two pairs with a single larger one. In those flowers the large single petal stood upright and was the upper one. So, too, it is in the sweet violet; or, rather, would be if the stalk did not curl over at the top, and cause the flower to hang down, making this larger petal be the lowest of the five.

In one respect the violet resembles the daisy, for it spreads by shoots, or “runners,” from the root. These runners form young plants which, during their first year of life, remained connected with the parent plant. But in the second year the link between the two decays and dies away, and the new plant must henceforth lead an

independent life. The strawberry also will increase in the same way.

This is how any increase in the number of the violet is oftenest made; the plant but rarely ripens seed. Nectar is in the flower, which, in ordinary circumstances, would attract the bees—those bees whose visits serve to fertilize so many flowers. But the sweet violet blooms early in the spring, before the bees are thoroughly at work, and so the plant escapes to a no small extent their fertilizing agency.

Then, too, the plant grows low, and keeps its blossoms hidden by the leaves. It may be said that clover is a low-growing plant, and yet bees flock to it. But clover carries a conspicuous upright flower, while the bee may weary in its search for the well-hidden violet.

The violet is perennial, and is oftenest found on shady hedge-banks and in woods. But it is not a very common flower. Even in many places where it seemingly grows wild, it is most probably of garden origin; it has escaped from cultivation, and has formed a colony.

Many are the virtues which have been attributed to the sweet violet. Its blossoms have been said by one old writer to be a sure means of "moderating anger;" and who indeed could harbour angry feelings while the scent of violets was in the air! A well-known perfume is prepared from them, and sometimes sweetmeats too.

21. THE DANDELION.

THIS is a flower which is almost universally regarded as a weed. We root it from our lawns and flower-beds ; the farmer sees it with disfavour in his fields. Yet, weed though we call it, it is one of the most lovely blossoms we possess. As the tall poppy is the king of scarlet flowers, so is the dandelion the most splendid golden blossom of the fields.

If you have ever chewed the brittle, hollow stalk you know that it is bitter ; so, too, is the long deep-growing perennial root. Therefore you might not think that there would be sweet nectar in the blossom. But there is. Nearly a hundred different kinds of insects come in search of it.

Like others already noticed, it is a *composite* flower, having no petals, but a blossom which is formed of many tiny florets—sometimes as many



Dandelion.

as two hundred in a large and well-formed head. These yellow florets are strap-shaped ; short, crowded, and erect in the centre of the blossom, larger and almost flat around its outer edge. The close-packed florets give the centre of the flower a much richer, deeper hue than the outside.

Equally well known with the golden flowers are the "puff-balls" of the seed. This is botanically called a *pappus*, or collection of winged seeds, and it accounts to a great extent for the commonness of the flower. A plant which, like the dandelion, has winged seeds, is self-sown everywhere ; the seeds are carried far upon the slightest breath of wind. So, let us keep our field or garden free from dandelions as we may, the presence of the plant upon a piece of waste ground or a hedge-bank near at hand ensures a fresh crop all around it in the following spring. The dandelion may be found in flower during almost every season of the year.

The seed and tiny "wing" are most ingeniously arranged. The seed is somewhat cone-shaped and possesses a sharp point upon its lower side, while

to the upper is attached the wing of hairs. These hairs, upon the ripening of the seed, spread out into the shape of an umbrella, open and turned upside down.

Each seed then floats away upon the breeze until its wing grows moist with rain or dew, or till the air is wholly calm. Then the seed falls, its sharp point penetrates the soil, and thus a plant is sown.

At first sight we may think the dandelion has no stem, but this is not the case. All plants have stems, although in many cases they are very short and wholly underground. It is so with the dandelion. Its leaves spring, not directly from the root, although we call them *radical*, but from a short stem at the top of the deep-growing tap-root. From this stem also grow the flower scapes, leafless, and bearing but a single blossom.

It is from its leaves that the dandelion takes its name—a corruption of the French words *dent de lion*—"lion's tooth." They are long, narrow, and deeply lobed. The lobes of many such indented leaves will be seen pointing forwards towards the

apex of the leaf ; those of the dandelion, on the contrary, point backwards towards its base.

Weed though we call the dandelion, yet it is a useful plant. Hundreds of wild flowers were in former days in some way used as medicine, though but a few are so employed to-day. But from the roots of dandelions country people still make wholesome "tea." The leaves, too, form a salad of agreeable taste.

22. THE PRIMROSE.

THERE are perhaps many flowers which we should not greatly miss, even though they were altogether absent from the countryside. Especially is this the case with flowers which appear in summer, when there are a host of other blossoms. One of our many thistles, for example, might be banished from the land without its loss attracting notice ; perhaps the nettle also we could make a shift to do without. But who can picture to himself an English spring without the yellow primrose in the woods ?

It is not wholly for the reason that the primrose comes when flowers are few that it is dear to every heart, though doubtless that is partly so. The exquisite pale yellow of its petals—or, as we must rather say, of its corolla—cannot well be matched by any other flower. Curiously, as we think, certain old writers used to call the primrose “green.”



Primrose.

The plant is a near relative of the cowslip, which we have already noticed, and the two are similar in many ways. Its leaves, though somewhat larger than the leaves of the cowslip, resemble them in being rough, the veins being deeply impressed on the surface of the upper side.

The blossom, too, is similar in some ways, though in others different. The primrose blossom is formed of a corolla having five lobes ; each lobe is notched upon its outer edge, and is marked near its base with a deep orange-coloured spot. The lower portion of the corolla is a tube, contained in a tube-shaped calyx.

So far the flowers of the primrose and the cowslip appear much alike. But in that of the primrose the lobes of the corolla are spread out into a broad, flat disk, sometimes two inches broad. The primrose is an easily noticeable flower.

So much for their appearance. Now there is a word to say about the way in which the blossoms grow. When speaking of the cowslip, we decided to remember that the blossoms grew in clusters on short stalks ; the cluster spring-

ing from an *umbel* on the top of a tall, upright stem.

Apparently those of the primrose grow in a wholly different way ; for, as you know, each blossom grows alone upon a tall and leafless scape. Yet in reality the method of the primrose blossoms is the same as that of the cowslip ; both grow in clusters from an umbel : only, in the primrose that umbel will be found upon the top of an exceedingly short stem below the ground.

Yet search will sometimes show both primroses and cowslips growing in such a way as to make clear the near relationship between the plants. We may discover a cowslip which among its ordinary flowers has one or two growing solitary ; and we may sometimes find a primrose with two blossoms growing together on a single stem.

We noticed that the leaves of violets were rolled up, until unfolded, in two rolls upon the upper surface of the leaf. Primrose leaves, too, are coiled up in two rolls ; but they are rolled upon the *under* side.

Primroses and cowslips alike are species of

primula, of which we have three other examples as wild flowers in this land—the ox-lip, the bird's-eye primrose, and the Scottish primrose. These three all bear their blossoms as the cowslip does—growing in clusters from an umbel on the top of a long stem. The primrose is the only one which has a short-stemmed umbel and long flower-stalks.

23. THE FORGET-ME-NOT.

OF three or four wild species of forget-me-not we have here pictured for us the great water forget-me-not—that which is, to our mind at least, the most attractive of them all. Not only is its individual beauty great, but we shall find its lovely flowers growing beside some pleasant stream—shall hear perhaps the moor-hen call, or see the coot swim in and out among the reeds beside the bank.

Yet the forget-me-not not seldom proves a disappointing plant; not in itself indeed, but from our thinking we have found it when the plant before us is an altogether different one—the brooklime speedwell, a more common flower.

At first sight only is the similarity apparent, for upon examination there can be no possible mistake between the two. Certainly the brooklime, like the forget-me-not, has a corolla for



Forget-me-not.

its blossom ; and this corolla is divided into lobes, while in both plants the colour is bright blue. But the blue of the brooklime is less clear and pure than that of the forget-me-not ; moreover, the brooklime has four lobes to its corolla, one being smaller than the rest. Now let us rather look at the delightful flower of the forget-me-not. That, too, has a corolla, but there are five lobes, and in their centre is a yellow spot. The calyx which surrounds the base of the corolla also has five lobes.

The flowers grow in clusters from the summit of the stalks, which are about a foot in height, and rather weak and trailing in their mode of growth. Those blossoms which grow lowest on the stems are first to open, and when these are in full flower we shall find pink folded buds still higher up ; for, though the open flowers of the forget-me-not are blue, the buds are pink.

The lower leaves grow on short stems from the root-stock, while others, longer and not so broad, grow on the flower-stems. These leaves

are nearly always smooth and shining—almost as if they were wet.

Yet other species of forget-me-not—the wood forget-me-not and field forget-me-not—have hairy leaves and stems. Now, why should those of the forget-me-not which forms our present subject be so smooth? The reason that appears most likely is soon given.

Plants have at least two great objects to fulfil. One is to preserve their pollen and honey in safety for such visitors as will, by transferring the pollen from flower to flower, or from one organ to another of the same flower, complete the necessary fertilizing of the seed. Another object of the plant is to scatter and thus sow that seed when it is fully fertilized.

Bees are in this way useful visitors, and so are other insects which have wings. But there are others far less welcome—creeping insects, who would rob the plant of honey or of pollen, yet without doing good. Therefore, many plants have hairy leaves and stems to keep such harmful insects from ascending to the flower.

But insects such as ants will not be likely to wade into water to ascend the plant; and so the great forget-me-not which grows in even shallow water can dispense with hairs upon its stem.

It does without something else possessed by its brothers of the land. The fruits of wood and field forget-me-nots are covered with hooked hairs when ripe. These catch upon the coats of passing mice or rabbits, and upon the fleeces of sheep, and so the seed is carried off and sown elsewhere. But our forget-me-not is growing where running water will be the best means of carrying the seed away.

24. THE WOOD HYACINTH.

THE violet lends but little colour to a landscape, for it hides its fragrant head among the leaves ; even a clump of primroses will hardly give a yellow colour to the bank on which those welcome blossoms grow. But where the blue wood hyacinth is found at all, it is most often found in great luxuriance, growing so thickly as to hide the ground. You look upon its million blossoms as upon a woodland lake, in which the clear blue sky of May is seen. In one old English forest where the hyacinth grows you may pass along the woodland paths and "drives" for half a mile and more, without a break in the rich colour that adorns the ground ; on either side the ancient oaks and beeches seem to rise from a wide sea of blue.

Before the blossoms come, the ground where the wood hyacinth grows is carpeted with its long



Wood Hyacinth.

narrow leaves of deep and glossy green. They, like the flower-stalks, are succulent, or juicy, and the leaves are channelled on their upper side. Their beauty is soon over, for they fade to a dull brown and droop almost before the summer comes. But when we see the blossoms in their glory we shall think but little of the fading leaves.

Ten or twelve blossoms grow upon and near the top of the tall leafless scape. There is a curious movement of the *pedicel*, or little stem, on which each blossom grows. For, till the flower is expanded, the unopened bud is held upright. Then, as each blossom opens, the small pedicel droops over, thus allowing the flower to hang down. And lastly, when the flower has fallen and the seed is ripe, the pedicel is once again upright.

And what, by the way, are we to call that blossom? Is it a corolla, or is it composed of distinct petals? It is really a *perianth*, divided into six parts, or having, if we put it in another way, six "coloured floral leaves." Its parts are not true petals, and moreover you will find that there are no sepals to be seen. The flower has none ;

but at the base of each small pedicel, or flower-stalk, are seen two greenish-purple bracts, which are peculiarly developed leaves.

The blossom is bell-shaped, or companulate, in shape, not differing greatly in its form from that of the hairbell. At first sight we might think the bell was in one solid piece, notched at the edges into lobes. But upon pulling one of these lobes outwards it yields readily, and we discover each is really separate almost to the blossom's base.

If we dig up a hyacinth we shall find that both the flower-stems and leaves grow from a bulb. Be careful not to call that bulb a root. There are small thread-like roots growing from it ; but the bulb itself is a storehouse of food which has been laid up by the plant for its own use. It does this all the year until the time arrives for flowering ; and thus it is that, if grown in a glass, it lives content upon no other nutriment but that derived from water and the air.

THE END.

PRINTED IN GREAT BRITAIN

BoF
C

Cooke, Arthur Owen
British trees and wild flowers.

609554

UNIVERSITY OF TORONTO
LIBRARY

DO NOT
REMOVE
THE
CARD
FROM
THIS
POCKET



